AIR EMISSION PERMIT NO. 05300251- 001
IS ISSUED TO

INTERPLASTIC CORPORATION

Interplastic Corporation, Commercial Resins Division
2015 Northeast Broadway Street
Hennepin County
Minneapolis, Minnesota 55413-1775

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	**Application Date**
Total Facility Operating Permit	January 29, 1997
Installation/Operation Permit (Major Amendment)	April 27, 1999

Pursuant to the requirements of Minn. Stat. chs. 115 and 116, Minnesota Air Quality Rules and 40 CFR §§ 52 and 70, this permit authorizes the permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal Part 70; Synthetic Minor under 40 CFR 52.21
Issue Date: December 20, 2000
Expiration: December 20, 2005
All Title I Conditions do not expire.

Don Smith

James L. Warner, P.E.
Director
Metro District

for Karen A. Studders
Commissioner
Minnesota Pollution Control Agency

DPS:lkk

TABLE OF CONTENTS

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provisions of the applicable requirements identified in the permit as the basis of each condition.

Subject to the limitations Minn. R. 7007.1800 and 7017,0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

Interplastic is an industrial facility located in Northeast Minneapolis that manufactures unsaturated polyester resins. Unsaturated polyester resins are thermoset resins used in construction (tubs and showers), marine and marine accessories (boats and boat accessories), gelcoating, casting (cultured marble and onyx), transportation (auto body parts and distributor caps) consumer goods, surface protective coatings, electrical components, business machines, bowling balls and household appliances. Additional information on the facility is available in the Technical Support Document.

An existing thermal oxidizer presently controls emissions from most of the facility's process equipment. Emissions from the Cowles mixing tanks, small mixers, waste resin curing process ("hot box") and steam kettle will be connected to and controlled by the existing Hirt thermal oxidizer or new air pollution control equipment (flameless thermal oxidizer) that the Permittee has installed to control emissions from its soil vapor extraction (SVE) system.

Following are summaries of the facility's limited potential and actual emissions in tons per year calculated as specified in federal regulation 40 CFR § 52.21 (b)(3) for the stationary source as described in this permit:

Table 1. Total Facility Emissions Summary if Mixing Tanks, Steam Kettle and Waste Resin Curing Are Connected to a Thermal Oxidizer:

	PM tpy	PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	VOC tpy	Pb tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions	32.6	32.6	0.2	42.1	22.2	52.6	neg.	37.3	64.4
Total Facility Actual Emissions	5.9	5.9	0.1	9.3	8.2	26.3	neg.	18.6	27.9

Table 2. Total Facility Emissions Summary if Permittee Chooses to Conduct Ambient Air Monitoring in Accordance with Appendix B:

	PM tpy	PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	VOC tpy	Pb tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions	32.6	32.6	0.2	42.1	22.2	84.1	neg.	65.7	95.9
Total Facility Actual Emissions	5.9	5.9	0.1	9.3	8.2	30.4	neg.	22.3	32.1

Where,

PM = Particulate Matter
PM_{10} = PM smaller than 10 microns
SO_2 = Sulfur Dioxide
NO_x = Nitrogen Oxides
VOCs = Volatile Organic Compounds
CO = Carbon Monoxide
HAPs = Hazardous Air Pollutants.
Pb = Lead

This facility has limited emissions of criteria pollutants to less than 250 tons per year and is a non-major source under 40 CFR pt. 52.21 (New Source Review; Prevention of Significant Deterioration).

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: **Total Facility**

What to do	Why to do it
A. NESHAP REQUIREMENTS	hdr
If applicable, the Permittee will comply with the Maximum Achievable Control Technology (MACT) Standard for Miscellaneous Organic Manufacturing scheduled for future promulgation by the U.S. Environmental Protection Agency.	40 CFR pt. 63
The permittee shall not construct or reconstruct a major source of hazardous air pollutants as defined in 40 CFR part 63, subpart B, section 63.2 without first obtaining a preconstruction permit.	Title I Condition: Limit to avoid 40 CFR part 63, Sections 63.40 to 63.44 and Minn. R. 7007.3010.
B. OPERATIONAL REQUIREMENTS	hdr
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.	Minn. R. 7007.0800, subp. 14; and Minn. R. 7007.0800, subp. 16(J)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020.
Air Pollution Control Equipment: Within 30 days of Permit Issuance, the Permittee shall submit written notification of whether it will connect EUs 001-006 (mixing tanks) and EU 007 (steam kettle) and EU 038 (waste resin curing) to a thermal oxidizer, or conduct monitoring in accordance with the options outlined in Appendix B "Ambient Air Monitoring Plan". If the Permittee chooses to connect EUs 001-006, EU 007 and EU 038 to a thermal oxidizer, connection shall be completed within 180 days of Permit Issuance. If the Permittee chooses to conduct monitoring in accordance with the options outlined in Appendix B "Ambient Air Monitoring Plan", a monitoring plan shall be submitted within 60 days of Permit Issuance for approval by the MPCA. The plan shall be implemented within 30 days of plan approval by the MPCA. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 115.04, subd. 1; Minn. Stat. 116.07, subd. 4a(a); Minn. Stat. 116.07, subd. 9 (b); Minn. Stat. 116.091, subd. 1
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
When the Permittee is required to notify the agency under Minn. R. 7019.1000, subps. 2 and 3, the Permittee shall immediately take all practical steps to modify operations to reduce the emission of air contaminants.	Minn. R. 7019.1000, subp. 3
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010 - 7030.0080
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its authorized representative or agent, to enter the Permittee's premises, at reasonable times, to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location at reasonable times for any purpose authorized by law.	Minn. R. 7007.0800, subp. 9(A)
Applicability of Opacity Standards: Opacity standards do not apply during periods of startup, shutdown, malfunction or as otherwise provided for in Minn. R. 7011.0010, subp. 4.	Minn. R. 7011.0010, subp. 4
C. NOTIFICATION REQUIREMENTS	hdr

Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
D. MONITORING REQUIREMENTS	hdr
VOC Capture Efficiencies: Within 90 days of Permit Issuance, the Permittee shall contract with an independent firm that employs licensed professional engineers and certified industrial hygienests qualified in the design, inspection and evaluation of industrial ventilation and air pollution control systems. The firm shall verify the capture efficiencies of the collection systems for all process equipment contributing to volatile organic compounds (VOC) emissions at the facility in accordance with the latest EPA-approved guidance. This includes, but is not limited to, the following sources: 1) EU 001- EU 006, Cowles and Small Mixers 2) EU 012 - EU 015, Reactor Kettles 3) EU 016 - EU 021, Thin Tanks 4) EU 007, Steam Kettle 5) EU 038, Waste Resin Curing (Hot Box)	Title I Condition: Monitoring to verify capture efficiencies used in calculations to determine major source status under 40 CFR 52.21; Minn. R. 7017.2020, subps. 1(A) and 1(F)
A report which explains the process taken to verify the capture efficiencies of the collection systems for the process equipment identified above contributing to VOC emissions at the facility and the results of the study shall be submitted to the MPCA within 180 days of Permit Issuance. For all processes that do not have capture efficiencies of at least 95%, the company shall contract with the independent firm referenced above to design and construct permanent collection systems that have capture efficiencies of at least 95%. The design plan for the capture systems shall be submitted to the MPCA within 270 days of Permit Issuance. Construction of the capture systems shall be completed within 365 days of Permit Issuance, and a notification shall be submitted upon completion of construction.	continued from above

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Performance Testing: The Permittee shall conduct performance tests as described below: 1) Two stack emissions tests downstream of the reactor kettles and upstream of the thermal oxidizer controlling emissions from them to verify the emission factor used in the Permittee's application. 2) Two stack emissions tests downstream of the thinning tanks and upstream of the thermal oxidizer controlling emissions from them to verify the emission factor used in the Permittee's application. 3) One stack emissions test downstream of the mixing tanks and upstream of the thermal oxidizer controlling emissions from them to verify the emission factor used in the Permittee's application.	Minn. R. 7017.2020, subps. 1(A) and 1(F); Minn. R. 7017.2025, subp. 2
4) The Permittee shall identify which pieces of equipment to test in order to provide representative emissions data for the facility, and agreed upon by the MPCA. Sufficient detail describing how the Permittee arrived at which pieces of equipment to test shall be included in the Performance Test Plan, or each single emission unit shall be required to be tested instead. 5) One stack performance test both upstream and downstream of the thermal oxidizer (CE 001) to measure VOC destruction efficiency.	continued from above
6) Two stack emissions test downstream of the thermal oxidizer (CE 001) to quantify and speciate criteria and hazardous air pollutant emissions from the facility. At least one of the tests shall be conducted during a batch cycle of a resin containing dicyclopentadiene. 7) All stack emissions testing shall be conducted in accordance with U.S. EPA approved testing methods and during maximum operation of all connected VOC-producing equipment, and therefore maximum VOC loading of the thermal oxidizers.	continued from above
Implementation of a Total Facility Air Emissions Toxics Analysis: The Permittee shall perform an air toxics analysis for all hazardous air pollutants emitted from the facility. That air toxics analysis shall be based on emissions data obtained during performance testing referenced above and include dispersion modeling for all identified pollutants of concern. Elements of the analysis shall include: 1) Air dispersion modeling of all identified pollutants of concern using the most recent EPA-approved computer models. The protocol and methodology shall be agreed to by the MPCA prior to the performance of the dispersion modeling.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
2) A comparison of maximum modeled 1-hour concentrations to draft Acute Health Risk Values (HRVs) or other methods used to estimate acute exposure levels as developed by the Minnesota Department of Health. 3) A comparison of maximum modeled three-hour concentrations with draft Subchronic HRVs. 4) A comparison of maximum modeled annual concentrations with draft Chronic HRVs.	continued from above
5) A comparison of maximum modeled 1-hour, 8-hour, 24-hour and annual concentrations to the National Ambient Air Quality Standards (NAAQS), as applicable. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	continued from above
Schedule for Performance Testing: The schedule for the performance testing shall be as follows: 1) The Performance Test Plan shall be submitted within 90 days of Permit Issuance. 2) The Permittee shall identify which pieces of equipment to test in order to provide representative emissions data for the facility, and agreed upon by the MPCA. Sufficient detail describing how the Permittee arrived at which pieces of equipment to test shall be included in the Performance Test Plan. 3) All stack emissions testing shall be completed within 120 days of Permit Issuance.	Minn. R. 7017.2030, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Schedule for Air Emissions Toxics Analysis: The elements of the toxics analysis shall be completed by the following dates: 1) The protocol for dispersion modeling shall be submitted within 180 days of Permit Issuance. 2) The dispersion modeling results, including the comparison of modeled concentrations with draft health risk values and National Ambient Air Quality Standards, shall be submitted within 730 days of Permit Issuance. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
Monitoring Equipment: Install or make needed repairs to any monitoring equipment required in Table A within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit). The combustion chamber temperature monitors of CE 001 and CE 002 shall be calibrated on a yearly basis. Records shall be maintained at the facility stating the date the calibration was conducted and the name of the company who performed the calibration.	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A and B, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
E. RECORDKEEPING REQUIREMENTS	hdr
Record keeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007. 0800, subp. 5(B)
Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Appendix A includes emission units at the facility that meet the criteria for an insignificant activity under Minn. R. 7007.1300. Appendix A includes only those insignificant activities at the time of Permit Issuance and is subject to change.	Minn. 7007.1300
F. REPORTING REQUIREMENTS	hdr
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 through Minn. R. 7002.0095
See Table B for additional submittal requirements.	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 002 Process Kettle Burners**

Associated Items: EU 022 Process Kettle #1 Burner

EU 023 Process Kettle #2 Burner

EU 024 Process Kettle #3 Burner

EU 025 Process Kettle #4 Burner

SV 005

SV 006

SV 007

SV 008

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies to each emission unit in this group.	Minn. R. 7011.0610, subp. 1(A)(1); Minn. R. 7011.0710, subp. 1(A); and Minn. R. 7011.0735
Opacity: less than or equal to 20 percent ; except for one six-minute period per hour of not more than a maximum of 60 percent opacity. This limit applies to each emission unit in this group individually.	Minn. R. 7011.0610, subp. 1(A)(2)
B. OPERATIONAL REQUIREMENTS	hdr
Fuel Usage: restricted to combusting natural gas or propane.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
The fuel supply to EUs 022-025 shall be shut off immediately following a breakdown or shutdown of CE 001. (For additional information, see GP 006 "Process Kettles and Thin/Mix/Blend Tanks").	Minn. R. 7019.1000, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 003 High Shear (Cowles) and Small Batch Mixers**

Associated Items: CE 001 Direct Flame Afterburner

EU 001 Cowles 100 HP Mixer #1 (North Cowles)

EU 002 Cowles 100 HP Mixer #2 (South Cowles)

EU 003 Cowles 100 HP Mixer #3 (Cowles 7,8,9)

EU 004 Small Mixer No. 1

EU 005 Small Mixer No. 2

EU 006 Small Mixer No. 3

SV 001

What to do	Why to do it
A. EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent of either Minn. R. 7011.0730 or Minn. R. 7011.0735. This limit applies to each emission unit in this group individually.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent . This limit applies to each emission unit in this group individually.	Minn. R. 7011.0715, subp. 1(B)
B. OPERATIONAL REQUIREMENTS	hdr
Mixing Tank Fume Collection: The Permittee shall maintain covers on all mixing tanks at the facility to facilitate efficient gathering of VOC-contaminated fumes for destruction in CE 001 or CE 002. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
The covers referenced above in Mixing Tank Fume Collection must remain in place at all times the mixers are in operation. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
Mixing Tank Emissions Collection: The Permittee shall vent emissions from EUs 001-006 to CE 001 or CE 002 within 180 days of Permit Issuance, or monitor emissions from the facility in accordance with the options outlined in Appendix B "Ambient Air Monitoring Plan". This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
See GP 008 "Thermal Oxidizers" for Operational Requirements of CE 001 and CE 002.	hdr
C. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughputs of EUs 001-006 in mm lb/year using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring requirement to assure maximum throughputs of EUs 001-006, used to calculate potential emissions under 40 CFR 52.21 as provided in permittee's application, have not been exceeded; Minn. R. 7007.0800, subp. 4(B)
See GP 008 "Thermal Oxidizers" for Monitoring and Recordkeeping Requirements of CE 001 and CE 002.	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 004 USTs Subject to 40 CFR pt. 60, subp. Kb**

Associated Items: TK 031 Styrene (UST No. 29)

TK 033 Dicyclopentadiene (UST No. 31)

TK 035 Alpha Methyl Styrene (UST No. 33)

TK 036 Ethylene Glycol (UST No. 34)

TK 037 Dicyclopentadiene (UST No. 36)

What to do	Why to do it
MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Monitoring of Operations: The Permittee shall maintain readily accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the storage vessel. Such records shall be kept for the life of the source. This requirement applies to each tank in this group individually.	40 CFR 60.116b(b)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 005 Base Polyester Resin Storage Tanks**

Associated Items: CE 001 Direct Flame Afterburner

SV 001

TK 001 Base Polyester Resin No. 1

TK 002 Base Polyester Resin No. 2

TK 003 Base Polyester Resin No. 3

TK 004 Base Polyester Resin No. 4

TK 005 Base Polyester Resin No. 5

TK 006 Base Polyester Resin No. 6

TK 007 Base Polyester Resin No. 7

TK 008 Base Polyester Resin No. 8

TK 009 Base Polyester Resin No. 9

TK 010 Base Polyester Resin No. 20

TK 011 Base Polyester Resin No. 21

TK 012 Base Polyester Resin No. 22

TK 013 Base Polyester Resin No. 23

TK 014 Base Polyester Resin No. 24

TK 015 Base Polyester Resin No. 25

TK 016 Base Polyester Resin No. 26

TK 017 Base Polyester Resin No. 27

TK 018 Base Polyester Resin A

TK 019 Base Polyester Resin B

TK 020 Base Polyester Resin C

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Base Resin Storage Tank Emissions Collection: The Permittee shall continue to vent emissions from TKs 001-020 to CE 001, or vent emissions to CE 002. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
See GP 008 "Thermal Oxidizers" for Operational Requirements of CE 001 and CE 002.	hdr
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
See GP 008 "Thermal Oxidizers" for Monitoring and Recordkeeping Requirements of CE 001 and CE 002.	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 006 Process Kettles, Thin / Mix / Blend Tanks**

Associated Items: CE 001 Direct Flame Afterburner

CE 003 Venturi Scrubber (w/ Carbon)

EU 012 Process Kettle #1 Vessel

EU 013 Process Kettle #2 Vessel

EU 014 Process Kettle #3 Vessel

EU 015 Process Kettle #4 Vessel

EU 016 Thin Tank #1

EU 017 Thin Tank #2

EU 018 Thin Tank #3

EU 019 Thin Tank #4

EU 020 Mix (Blend) Tank #5

EU 021 Mix (Blend) Tank #6

EU 036 Pilot Plant

SV 001

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
GP 006 Emissions Collection: The Permittee shall continue venting emissions from EUs 012-015 and EUs 016-021 to CE 001, or vent emissions to CE 002.	Title I Condition: To avoid classification as a major source under 40 CFR pt. 52.21; Minn. R. 7007.0800, subp. 14
GP 006 Emissions Collection: The Permittee shall continue venting emissions from the Pilot Plant's (EU 036) reactor kettle to CE 001, or vent emissions to CE 002. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
During a Breakdown or Shutdown of CE 001, minimization of emissions shall include at a minimum: 1. the four-way damper valve shall vent all emissions from EU 012-015 away from CE 001 and vent emissions to CE 003 (see GP 006); 2. fuel to EUs 022-025 (i.e. gas valve) shall be shut off (see GP 002); 3. pumps charging materials to EUs 012-015 shall stop; 4. cooling water shall be sent to EUs 012-015; 5. the temperature of EUs 012-015 shall be cooled to 150 degrees F; 6. the nitrogren stripping flow shall automatically switch to a blanket mode where the bottom nitrogen becomes top nitrogen; and 7. all flow of material from EUs 012-015 to EUs 016-019 shall stop. The above shall occur immediately following a Breakdown or Shutdown of CE 001.	Minn. R. 7007.0800, subp. 2; and Minn. R. 7019.1000, subp. 4
See GP 008 "Thermal Oxidizers" for Operational Requirements of CE 001 or CE 002.	hdr
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughputs of EUs 012-015 in mm lb/year, and EUs 016-021 in mm lb/year, using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring to assure maximum throughputs of the EUs in GP 006, used to calculate potential emissions under 40 CFR 52.21 as provided in permittee's application, haven't been exceeded; Minn. R. 7007.0800, subp. 4(B)
See GP 008 "Thermal Oxidizers" for Monitoring and Recordkeeping Requirements of CE 001 or CE 002.	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 007 Soil Vapor Extraction (SVE) Vent System**

Associated Items: CE 001 Direct Flame Afterburner

EU 029 SVE Vent #1

EU 030 SVE Vent #2

EU 031 SVE Vent #3

EU 032 SVE Vent #4

EU 033 SVE Vent #5

EU 034 SVE Vent #6

EU 035 SVE Vent #7

SV 001

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
SVE System Fume Collection: The Permittee shall vent all emissions from the SVE system to CE 001 or CE 002 for control of VOC emissions at all times the SVE system is in operation.	Title I Condition: To avoid classification as a major source under 40 CFR 52.21; Minn. R. 7007.0800, subp. 2 and Minn. R. 7007.0800, subp 16(J); Minn. Stat. 116.07, subd. 4a(a)
The SVE system blower shall be shut off immediately following a shutdown or breakdown of CE 001 or CE 002.	Minn. R. 7019.1000, subp. 4
CE 001 and CE 002 Destruction Efficiency for Volatile Organic Compounds: greater than or equal to 95.0 percent destruction efficiency.	Title I Condition: To avoid classification as a major source under 40 CFR pt. 52.21; Minn. R. 7007.0800, subp. 14; Minn. R. 7011.0070, subp. 1, Table A
See GP 008 "Thermal Oxidizers" for additional Operational Requirements of CE 001 and CE 002.	hdr
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
See GP 008 "Thermal Oxidizers" for Monitoring and Recordkeeping Requirements of CE 001 and CE 002.	hdr
C. NOTIFICATION REQUIREMENTS	hdr
Completion of Operation: submit written notification of SVE project completion within 60 days of SVE project termination.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 008 Thermal Oxidizers**

Associated Items: CE 001 Direct Flame Afterburner

CE 002 Direct Flame Afterburner

SV 001

SV 013

What to do	Why to do it
A. FUEL RESTRICTIONS	hdr
Fuel Usage: restricted to combusting natural gas or propane.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
B. OPERATIONAL REQUIREMENTS	hdr
Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
CE 001 and CE 002 Destruction Efficiency for Volatile Organic Compounds: greater than or equal to 95.0 percent destruction efficiency.	Title I Condition: To avoid classification as a major source under 40 CFR pt. 52.21; Minn. R. 7007.0800, subp. 14; Minn. R. 7011.0070, subp. 1, Table A
CE 001 and CE 002 Combustion Chamber Temperature: greater than or equal to 1400 degrees F at all times the thermal oxidizers are in operation. A new minimum temperature may be set pursuant to Minn. R. 7017.2025, subp. 3, based on the average temperature recorded during the most recent performance test where compliance for VOC destruction efficiency was demonstrated.	Title I Condition: To avoid classification as a major source under 40 CFR pt. 52.21; Minn. R. 7007.0800, subp. 14
During a Breakdown or Shutdown of CE 001, minimization of emissions shall include at a minimum: 1. the four-way damper valve shall vent all emissions from EU 012-015 away from CE 001 and vent emissions to CE 003 (see GP 006), 2. fuel to EUs 022-025 (i.e. gas valve) shall be shut off (see GP 002), 3. pumps charging materials to EUs 012-015 shall stop, 4. cooling water shall be sent to EUs 012-015, 5. the temperature of EUs 012-015 shall be cooled to 150 degrees F, 6. the nitrogren stripping flow shall automatically switch to a blanket mode where the bottom nitrogen becomes top nitrogen, 7. all flow of material from EUs 012-015 to EUs 016-019 shall stop, and The above shall occur immediately following a Breakdown or Shutdown of CE 001.	Minn. R. 7007.0800, subp. 2; and Minn. R. 7019.1000, subp. 4; Minn. Stat. 116.07, subd. 4a(a)
C. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
CE 001 and CE 002 Combustion Chamber Temperature Monitoring: install, operate, and maintain a monitor that continously measures and records the temperature in CE 001's and CE 002's combustion chamber in degrees Fahrenheit.	Title I Condition: Monitoring to avoid classification as a major source or major modification under 40 CFR pt. 52.21; Minn. R. 7007.0800, subp. 14; and Minn. R. 7007.0800, subp. 4
CE 001 and CE 002 Combustion Chamber Temperature Monitor Operation: The combustion chamber temperature monitors shall be operated at all times when CE 001 and CE 002 are operating.	Minn. R. 7007.0800, subp. 4
CE 001 and CE 002 Combustion Chamber Temperature Monitor Recordkeeping: Records of the combustion chambers' temperature shall be maintained for a minimum of five years from the date of measurement.	Minn. R. 7007.0800, subp. 5
D. MAINTENANCE REQUIREMENTS	hdr
Operation and Maintenance Plan: The Permittee shall develop and maintain a comprehensive operation and maintenance plan for all air pollution control equipment. The plan shall include CE 001and CE 002 and be retained at the stationary source and made available for review to representatives of the Agency upon presentation of credentials.	Minn. R. 7007.0800, subp. 14; and Minn. R. 7007.0800, subp. 16(J)
Control Equipment Maintenance: The Permittee shall maintain an inventory of spare parts for CE 001 and CE 002 that are subject to frequent replacement, as required by the manufacturer's specifications.	Minn. R. 7011.0075, subp. 2(A)
Control Equipment Maintenance: The Permittee shall maintain a record of parts replaced, repaired, or modified for the previous five years.	Minn. R. 7011.0075, subp. 2(I)
Control Equipment Maintenance: The Permittee shall train staff on the proper operation, monitoring and troubleshooting of CE 001and CE 002, and train and require staff to respond to indications of malfunctioning control equipment.	Minn. R. 7011.0075, subp. 2(B)
E. PERFORMANCE TESTING REQUIREMENTS	hdr
Initial Performance Test: due 1,095 days after Permit Issuance to demonstrate a total VOCs destruction efficiency of greater than or equal to 95.0% (>=95.0%) for both CE 001 and CE 002.	Minn. R. 7017.2020, subp. 1

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Performance Test Pre-test Meeting: due 7 days before Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs	Minn. R. 7017.2030, subp. 4
Performance Test: due before end of each calendar 36 months following Initial Performance Test to demonstrate a total VOCs destruction efficiency >=95.0% for both CE 001 and CE 002. The tests shall be conducted at an interval not to exceed 36 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each calendar 36 months following Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs (7 days before each Performance Test)	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **GP 009 Finished Product Drumming**

Associated Items: EU 009 North Drumming Station

EU 010 South Drumming Station

What to do	Why to do it
MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughputs of EUs 009-010 in mm lb/year using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring requirement to assure maximum throughputs of EUs 009-010, used to calculate potential emissions under 40 CFR 52.21 as provided in Permittee's application, have not been exceeded; Minn R. 7007.0800, subp. 4(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **EU 007 Steam Kettle**

Associated Items: CE 001 Direct Flame Afterburner

SV 001

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Steam Kettle Emissions Collection: The Permittee shall vent emissions from EU 007 to CE 001 or CE 002 within 180 days of Permit Issuance, or monitor emissions from the facility in accordance with the options outlined in Appendix B "Ambient Air Monitoring Plan". This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughput of EU 007 in mm lb/year using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring requirement to assure maximum throughput of EU 007, used to calculate potential emissions under 40 CFR 52.21 as provided in the Permittee's application, have not been exceeded; Minn. R. 7007.0800, subp. 4(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: EU 037 Finished Product Tanker Truck Loading

What to do	Why to do it
MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughput of EU 037 in mm lb/year using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring requirement to assure maximum throughput of EU 037, used to calculate potential emissions under 40 CFR 52.21 as provided in the Permittee's application, have not been exceeded; Minn. R. 7007.0800, subp. 4(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **EU 038 Resin Curing Process (Hot Box)**

Associated Items: CE 001 Direct Flame Afterburner

SV 001

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Resin Curing Process Emissions Collection: The Permittee shall continue to vent emissions from EU 038 (Hot Box) to CE 001, or vent emissions to CE 002, at all times EU 038 is in operation, or monitor emissions from the facility in accordance with the options outlined in Appendix B "Ambient Air Monitoring Plan". This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Recordkeeping: By the 15th day of each month, the Permittee shall record the throughput of EU 038 in mm lb/year using a 12-Month Rolling Sum. The certified records shall be maintained at the facility and shall be made available for submittal or review by Agency staff, for the purpose of demonstrating compliance with the facility-wide synthetic minor limit taken to avoid major source classification under 40 CFR 52.21. The certification required shall meet the requirements of Minn. R. 7007.0500, subp. 3. Records shall be maintained for a minimum of 5 years from the date of calculation.	Title I Condition: Periodic monitoring requirement to assure maximum throughput of EU 038, used to calculate potential emissions under 40 CFR 52.21 as provided in the Permittee's application, have not been exceeded; Minn. R. 7007.0800, subp. 4(B)
Recordkeeping and Emission Calculation Verification for Resin Cured in EU 038: For one cycle during each of the first six months following Permit Issuance, the Permittee shall: 1) record the weight of the uncured resin drums on a specific pallet prior to and after heat treatment in EU 038; and 2) calculate and record the difference in weight of each drum prior to and after treatment. A cycle is defined as the time from when semi-gelled resin is placed in the hot box until it is removed as cured resin. After six months, the data collected will be used to verify the calculation method using the MPCA-approved emission factor of 3 percent and a worst-case scenario styrene content of 40 percent. If the data collected shows that the emission factor has underpredicted emissions, the Permittee shall apply for a permit amendment to change the calculation method, such that the facility remains a synthetic minor source.	Title I Condition: Periodic monitoring requirement to assure maximum throughput of EU 038, used to calculate potential emissions under 40 CFR 52.21 as provided in the Permittee's application, have not been exceeded; Minn. R. 7007.0800, subp. 4(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Subject Item: **CE 003 Venturi Scrubber (w/ Carbon)**

Associated Items: GP 006 Process Kettles, Thin / Mix / Blend Tanks

What to do	Why to do it
A. OPERATIONAL REQUIREMENTS	hdr
Operate CE 003 whenever CE 001 is not in operation, unless otherwise noted in Table A.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J); Minn. Stat. 116.07, subd. 4a(a)
B. MONITORING AND RECORDKEEPING REQUIREMENTS	hdr
Record pressure drop across the carbon bed and liquid flow rate once every 24 hours if in operation.	Minn. R. 7011.0080
The Permittee shall maintain records verifying the actual hours of CE 003 is in operating during a shutdown or breakdown of CE 001. This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.	Minn. R. 7007.0800, subp. 2; Minn. Stat. 116.07, subd. 4a(a)
C. MAINTENANCE REQUIREMENTS	hdr
Operation and Maintenance Plan: The Permittee shall develop and maintain a comprehensive operation and maintenance plan for all air pollution control equipment. The plan shall include CE 003 and be retained at the stationary source and made available for review to representatives of the Agency upon presentation of credentials.	Minn. R. 7007.0800, subp. 14; and Minn. R. 7007.0800, subp. 16(J)
Control Equipment Maintenance: The Permittee shall maintain an inventory of spare parts for CE 003 that are subject to frequent replacement, as required by the manufacturer's specifications.	Minn. R. 7011.0075, subp. 2(A)
Control Equipment Maintenance: The Permittee shall maintain a record of parts replaced, repaired, or modified for the previous five years.	Minn. R. 7011.0075, subp. 2(I)
Control Equipment Maintenance: The Permittee shall train staff on the proper operation, monitoring and troubleshooting of CE 003, and train and require staff to respond to indications of malfunctioning control equipment.	Minn. R. 7011.0075, subp. 2(B)

TABLE B: SUBMITTALS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

Permit Technical Advisor
Permit Section
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:
- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

Supervisor
Compliance Determination Unit
Air Quality Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit .	Total Facility
Computer Dispersion Modeling Protocol	due 180 days after Permit Issuance	Total Facility
Computer Dispersion Modeling Results	due 730 days after Permit Issuance. The results shall include comparisons to the HRVs and NAAQS as required above in Computer Dispersion Modeling Protocol.	Total Facility
Monitoring Plan	due 60 days after Permit Issuance for Ambient Air Monitoring, in accordance with Appendix B. This Monitoring Plan is not required if the Permittee connects EUs 001-006, EU 007 and EU 038 to a thermal oxidizer in accordance to Table A.	Total Facility
Notification	due 30 days after achieving maximum capacity. Achieving maximum capacity shall mean hooking up and venting all emission units to CE 001 or CE 002 as required by Table A of this permit.	Total Facility
Notification	due 30 days after Permit Issuance of which option Permittee has chosen: 1) connection of EU001-006, EU007 and EU038 to a thermal oxidizer; or, 2) Ambient Air Monitoring as outlined in Appendix B.	Total Facility
Notification	due 365 days after Permit Issuance of the Completion of Construction of VOC Capture Systems.	Total Facility
Operation and Maintenance Plan	due 60 days after Permit Issuance for all air pollution control equipment at the facility. The Operation and Maintenance Plan shall become an integral and enforceable part of this permit upon approval by the MPCA.	Total Facility
Performance Test Notification (written)	due 30 days before Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs	GP008
Performance Test Plan	due 30 days before Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs	GP008
Performance Test Report - Microfiche Copy	due 105 days after Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs	GP008
Performance Test Report	due 45 days after Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs	GP008
Submittal	due 180 days after Permit Issuance. A report which explains the process taken to verify the capture efficiencies of the collection systems for all process equipment contributing to VOC emissions at the facility and the results of the study.	Total Facility
Submittal	due 270 days after Permit Issuance. Design plans for the capture system for all processes that do not have capture efficiencies of at least 95%.	Total Facility

Submittal	due 30 days after achieving maximum capacity certifying that the combustion chamber residence times of CE 001 and CE 002 are greater than or equal to 1 second at all times the thermal oxidizers are in operation. Achieving maximum capacity shall mean hooking up and venting all emission units to CE 001 or CE 002 as required by Table A of this permit. This submittal shall include, at a minimum, calculations that take into account: 1. the dimensions of each oxidizer's combustion chamber, 2. the exhaust gas and combustion air flowrates at normal operating conditions, and 3. the properties of the typical gases being combusted.	GP008

TABLE B: RECURRENT SUBMITTALS

12/20/00

Facility Name: Interplastic Corp - Minneapolis Plant

Permit Number: 05300251 - 001

What to send	When to send	Portion of Facility Affected
Progress Report	due 15 days after end of each calendar month following Monitoring Plan approval. Progess Report shall include a statistical analysis of the data collected (i.e. average, maximum and minimum concentrations and their correlations with wind speed and direction) and dates of Quality Assurance (QA) checks and a description of each QA check. These monthly Progress Reports are not required if the Permittee connects EUs 001-006, EU 007 and 038 to a thermal oxidizer in accordance to Table A.	Total Facility
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations occur, the Permittee shall submit the report stating no deviations.	Total Facility
Annual Report	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year). This report must include the 12-month rolling sum of VOCs emitted.	Total Facility
Compliance Certification	due 30 days after end of each calendar year following Permit Issuance (for the previous calendar year) on a form approved by the Commissioner. The Certification is to be submitted to the U.S. Environmental Protection Agency (see address on Page B-1) and the Commissioner. The report covers all deviations experienced during the calendar year.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance (April 1). To be submitted on a form approved by the Commissioner.	Total Facility
Performance Test Notification (written)	due 30 days before end of each calendar 36 months following Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs. (30 days before each Performance Test)	GP008
Performance Test Plan	due 30 days before end of each calendar 36 months following Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs. (30 days before each Performance Test)	GP008
Performance Test Report - Microfiche Copy	due 105 days after end of each calendar 36 months following Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs (105 days after each Performance Test)	GP008
Performance Test Report	due 45 days after end of each calendar 36 months following Initial Performance Test to demonstrate >=95.0% destruction efficiency for total VOCs (45 days after each Performance Test)	GP008

APPENDIX A: INSIGNIFICANT ACTIVITIES 11/13/00

Facility Name: Interplastic Corporation, Minneapolis Plant

Permit Number: 05300251-001

The following Emission Units are considered 'insignificant activities' pursuant to the requirements of Minn. R. 7007.1300, subps. 3 and 4:

Product Loading

- EU 009 North Drumming Station
- EU 010 South Drumming Station
- EU 037 Finished Product Tanker Truck Loading

Boilers

- EU 011 Hot Oil Boiler
- EU 026 South Steam Boiler
- EU 027 North Steam Boiler

Underground Storage Tanks

- TK 025 (UST No. 1 Propylene Glycol)
- TK 026 (UST No. 2 Dipropylene Glycol)
- TK 027 (UST No. 8 2-Methyl-Propanediol)
- TK 028 (UST No. 9 Propylene Glycol)
- TK 029 (UST No. 10 Propylene Glycol)
- TK 030 (UST No. 11 PEER-Polyol)

Aboveground Storage Tanks

- TK 021 (AST No. 15 Propylene Glycol)
- TK 022 (AST No. 16 Maleic Anhydride)
- TK 023 (AST No. 17 Phthalic Anhydride)
- TK 024 (AST No. 28 Styrene High Five)

Miscellaneous Emission Units

- Production Laboratory's Quality Control Reactor Kettle (and associated laboratory testing activities)
- Research and Development Laboratory
- Sauder Drumming Station

TECHNICAL SUPPORT DOCUMENT for
DRAFT AIR EMISSION PERMIT NO. 05300251-001

This technical support document is for all the parties interested in the draft permit. The purpose of this document is to set forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions.

Table of Contents

Permit Action Number:
Date: 1/30/2004

Attachments

Executive Summary

The Interplastic facility emits styrene, in addition to several other hazardous air pollutants (HAPs), above thresholds requiring a federal Part 70 Total Facility Operating Permit.

Monitored styrene concentrations near the facility were considerably higher than concentrations measured at three other monitoring locations in the Twin Cities Metropolitan Area.

Because styrene and other the hazardous air pollutants have known health effects, this air emission permit will minimize the amount these pollutants being emitted by requiring the Permittee to:

- vent process emissions from the mixing tanks, steam kettle and waste resin curing to air pollution control equipment, or produce verifiable, comprehensive data concerning the impact of styrene and other HAPs emissions from the Permittee's facility on the ambient air in the surrounding community;

- contract with an independent professional firm to verify at least 95 percent of the emissions are being captured;

- capture all previously uncontrolled process emissions where the efficiency has been determined to be less than 95 percent;

- perform several engineering performance tests on the largest sources of HAPs at the facility to determine the worst-case scenario emissions and to verify information used in the Permittee's application; and,

- use the above test data in computer modeling to produce a comparative analysis of the ambient concentrations in the surrounding community with the Minnesota Department of Health's proposed Health Risk Values for the hazardous air pollutants (HAPs), and with the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants.

Based on Minn. Stat. § 116.07, subd. 4a(a), Minn. R. 7007.0800, subp. 2 and the Minnesota Department of Health's Consultation dated April 1999*"Interplastic Corporation: Recommendations for Draft Air Permit,"* minimizing the amount of styrene and other hazardous air pollutants emitted will reduce the potential for a possible environmental or public health concern, and will protect human health and the environment (see Attachment N).

1. General Information

1.1. Applicant and Stationary Source Location:

Owner and Operator Address and Telephone Number (list both if different)	Facility Address (SIC Code: 2821)
Interplastic Corporation 1225 Wolters Boulevard Saint Paul, Minnesota 55110-5145 (651) 481-6863	Interplastic Corporation CoRezyn Division 2015 Northeast Broadway Street Minneapolis, Minnesota 55413-1775 (651) 481-6860

1.2. Description of the facility

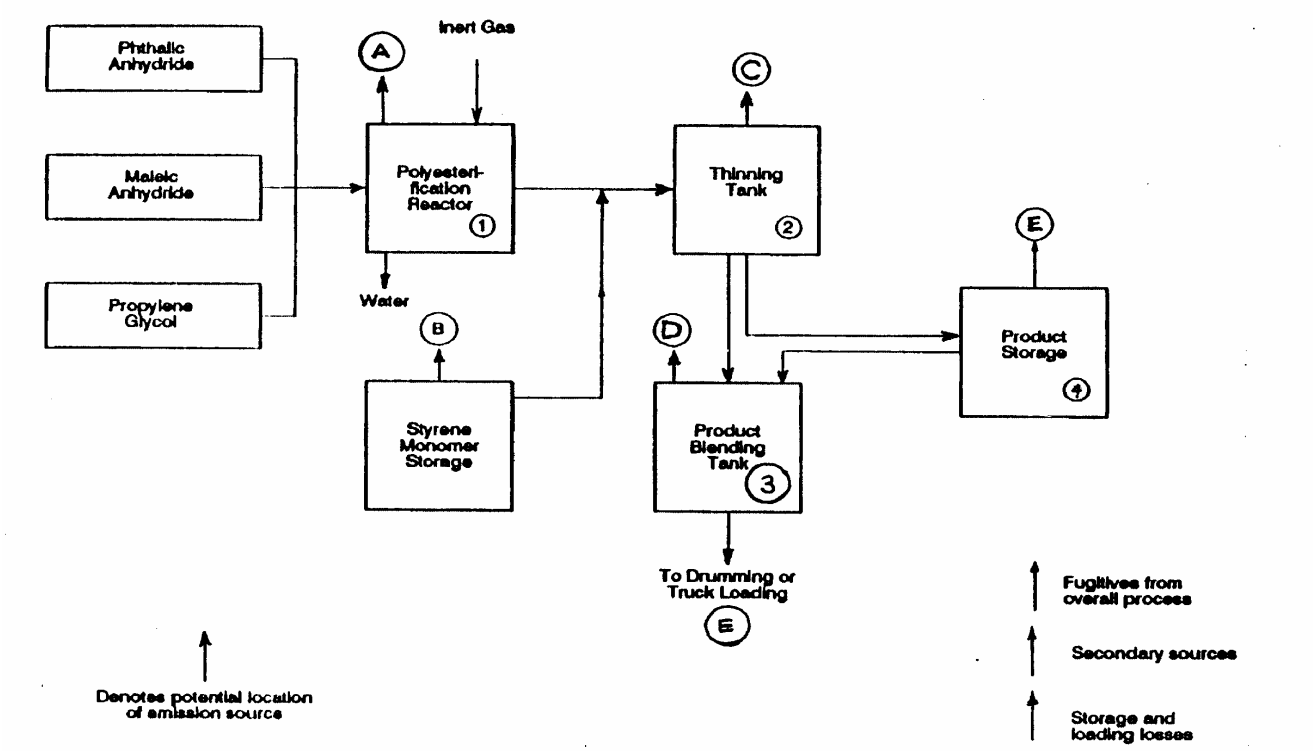
Interplastic is an industrial facility located in Northeast Minneapolis that manufactures unsaturated polyester resins. Unsaturated polyester resins are thermoset resins used in construction (tubs and showers), marine and marine accessories (boats and boat accessories), gelcoating, casting (cultured marble and onyx), transportation (auto body parts and distributor caps), consumer goods, surface protective coatings, electrical components, business machines, bowling balls and household appliances.

The facility receives the raw materials used in its processes via tanker trucks, rail cars and other commercial vehicles. Raw materials are either gravity-fed into underground storage tanks, pumped to aboveground storage tanks via centrifugal pumps, or transferred physically to storage areas located within the facility. Raw material receiving and storage contributes to volatile organic compound (VOC) emissions. See (**B**) in Figure 1.

Interplastic's unsaturated polyester resins are complex polymers that contain a styrene monomer created during a batch process. The batch process consists of the reacting, thinning and blending/mixing stages as shown in Figure 1 (see Page 3). VOC emissions are generated during all stages of the process.

During polyesterification, dibasic acids such as maleic and phthalic anhydrides, and glycols such as ethylene and propylene glycol are combined to form a resin. This condensation reaction is carried out in a enclosed, insulated stainless steel kettle equipped with a stirring mechanism. Batches are heated to about 380-430^{o} F (190-220^{o} C) and held for 10 to 20 hours. VOC emissions usually peak quickly and decline over the first several hours of the reaction and gradually taper off to negligible levels as the reaction completes. The mixture is then heated and held while water (a by-product) is continuously removed by bubbling nitrogen (or another inert gas) through the mixture (Step 1). When the desired degree of condensation is reached, the product is cooled, and transferred to the thinning tank. In the thinning tank, styrene monomer is combined with the cooling unsaturated resin from the polyesterification vessel (Step 2). The product may be mixed further and blended with additives or additional styrene depending on desired specifications (Step 3), transferred to storage tanks if necessary, or undergo final preparations for shipment (Step 4).

Figure 1 -- Typical Unsaturated Polyester Resin Production



During the reactor stage, fumes (glycol vapors, reaction materials, nitrogen purge stream and water vapor) are pulled from the reactor vessels and vented to an existing thermal oxidizer (**A**). During the thinning tank operation stage, uncondensed vapors are vented to an existing thermal oxidizer (**C**). During the mixing/blending stage, fumes (styrene and other chemicals) drawn from the mixing tanks that previously escaped to the atmosphere will be vented to a thermal oxidizer (**D**) as required by this permit.

When the thermal oxidizer breaks down or is manually shut down, fumes from the reactor vessels are vented to a back-up wet-scrubber spray-tower/activated-carbon system. The liquid from the system is recovered and sent to a recirculation tank where it is either reused in the scrubbing process or recycled back into a specific batch of polyester resin. Also during thermal oxidizer break downs, overhead vapors (styrene) from the thinning tanks are controlled by cooling-water condensers that restore the styrene vapor to a liquid.

Finished product is loaded for shipment via tanker trucks and other containers (drums and bins). Tanker trucks (45,000 gallons) are parked in one of two loading areas and then filled with resin from the top hatch. Drums (55 gallons) and tote bins (250 to 350 gallons) are manually filled with resin at a “drumming station”. Both finished product packaging methods contribute to VOC emissions (**E**).

1.3 Description of any changes allowed with this permit issuance

This permit requires the following previously uncontrolled processes to be connected to the facility's air pollution control equipment (thermal oxidizer):

Emission Unit or Source of Emissions	Description
EUs 001-003	Cowles 100 HP high-shear mixers (Nos. 1, 2 and 3)
EUs 004-006	Small batch mixers
EU 007	Steam kettle
EU 038	Resin curing process (i.e. "hot box", previously a source of fugitive emissions)

1.4 Description of all amendments issued since the issuance of the last total facility permit to be included in the Part 70 Permit.

Permit Number and Issuance Date	**Action Authorized**
1176-86-OT 05300251 November 24, 1986	Total Facility Operating Permit.
05300251-001 December 27, 1988	Amendment No. 1. Installation of air pollution control equipment (i.e. thermal oxidizer).
05300251-002 March 10, 1989	Amendment No. 2. Submission of an odor control plan for tanker truck and rail car unloading areas.
05300251-003 July 31, 1991	Amendment No. 3. Connection of existing storage tanks to the thermal oxidizer for additional odor control. Requirement to shut down the reactor kettles (connected to the thermal oxidizer) when the thermal oxidizer fails, and to report all breakdowns of the thermal oxidizer to the MPCA.
1176-92-F-1 05300251-004 December 8, 1992	Pronto Permit. Installation and operation of a pilot plant, which also authorized the connection of the pilot plant to the thermal oxidizer for odor control.
1176-96-I/O-1 05300251-005 February 26, 1996	Construction and Operation Permit. Installation and operation of a soil vapor extraction system. Requirement to submit and implement an approved ambient air monitoring plan.
1176-99-I/O-1 05300251-006 September 14, 1999	Construction and Operation Permit. Installation and operation of a soil vapor extraction system, and operation of a thermal oxidizer.

1.5. Facility Emissions:

Table 1. Total Facility Emissions Summary if
All Uncontrolled Emission Units Are Connected to a Thermal Oxidizer:

	PM tpy	PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	VOC tpy	Pb tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions	25.6	25.6	0.2	42.1	22.2	52.6	neg.	37.3	64.4
Total Facility Actual Emissions	3.7	3.7	0.1	9.3	8.2	26.3	neg.	18.6	27.9

Table 2. Total Facility Emissions Summary if
Permittee Chooses to Conduct Ambient Air Monitoring in Accordance with Appendix B:

	PM tpy	PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	VOC tpy	Pb tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions	25.6	25.6	0.2	42.1	22.2	84.1	neg.	65.7	95.9
Total Facility Actual Emissions	3.7	3.7	0.1	9.3	8.2	30.4	neg.	22.3	32.1

Table 3. Total Facility Classification

Classification	Major/Affected Source	Synthetic Minor *	Minor *
Prevention of Significant Deterioration	NA	VOC	PM, PM_{10}, SO_2, NO_x, CO and Lead
Non-Attainment Area Review	NA	NA	PM, PM_{10}, SO_2, NO_x, CO and Lead
Part 70 Permit Program	HAPs	NA	PM, PM_{10}, SO_2, NO_x, VOCs, CO and Lead

* Refers to potential emissions that are less than those specified as major by 40 CFR § 52.21, 40 CFR pt. 51, Appendix S, and 40 CFR pt. 70.

2. Regulatory Overview of Facility

Table 4. Summary Regulatory and/or Statutory Basis of the Emission and/or Operational Limits

EU, GP, or SV No.:	Applicable Regulations	Description
Total Facility	40 CFR pt. 63	Maximum Achievable Control Technology (MACT) Standard for Miscellaneous Organic Manufacturing Process (Subp. FFFF) to be promulgated 11/15/2000 if applicable.
Total Facility	Minn. R. 7007.0800, subp. 2; Minn. R. 7001.0150, subp. 2; Minn. Stat. 116.07, subd. 4a., and Minn. Stat. 116.061, subd. 2	Requirement to vent uncontrolled process equipment to air pollution control equipment.
EUs 022-025	Minn. R. 7011.0510, subps. 1 and 2	State Standards of Performance for Existing Indirect Heating Equipment: Limits particulate matter and opacity.

GP 003	Minn. R. 7011.0715, subps. 1(A) and 1(B)	State Standards of Performance for Industrial Process Equipment: Limits particulate matter and opacity.
CE 001 and 002	40 CFR 52.21	New Source Review (Prevention of Significant Deterioration). Operational requirements placed on control equipment to avoid major source classification under federal New Source Review.

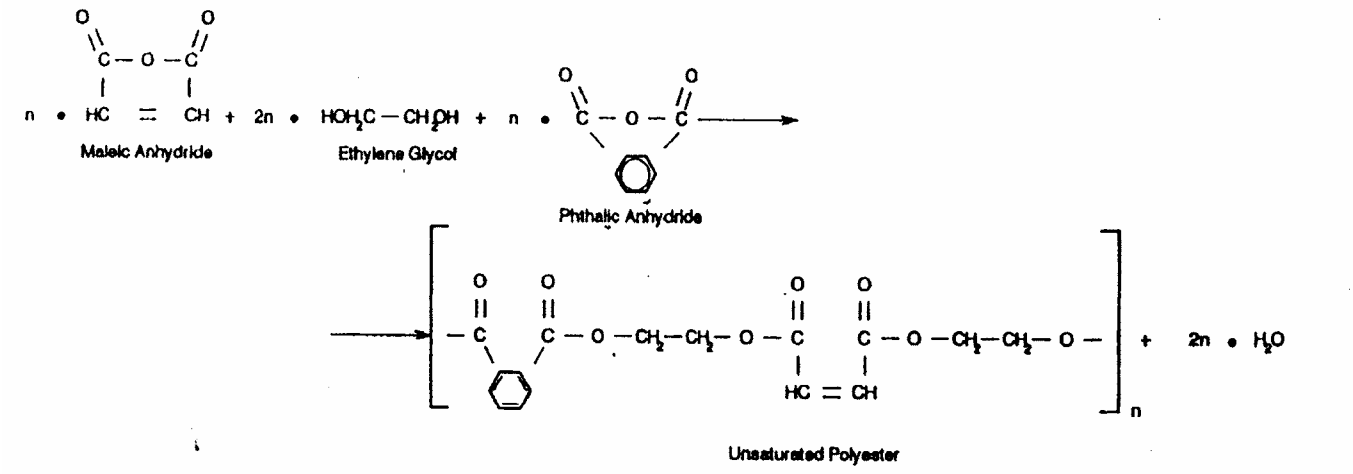
3. Technical Information

3.1 Calculation of Emissions

Estimating Interplastic's potential and actual emissions is important because it assists MPCA staff determining what federal rules and regulations apply to the facility. The MPCA typically recognizes several different methods for calculating a facility's emissions, including emission factors, material balance, performance test data and TANKS, a computerized estimating program.

MPCA staff was not able to use a material balance because Interplastic was unable to provide all material usage information and identify the specific chemical reactions necessary to perform the material balance. The method of material balance relies on the principle that what goes into a system must come out. Although the quantity of VOC-containing raw materials used at the facility each year may be known, it does not appear that subtracting the amount of VOCs remaining in the finished product from the quantity used would provide an accurate amount of VOCs emitted because of the chemical reactions that take place during the batch process. This is why a material balance to determine emissions of various chemicals used at the Interplastic facility may not be possible. The general chemical reaction that forms the unsaturated polyester is shown in Figure 2. Inhibitors are added to the unsaturated polyester so that the styrene added during the thinning, blending and/or mixing processes does not react prematurely to form the cross-linked polyester resin. When the final product is being used by a customer, a catalyst is added to initiate and drive the chemical that forms the cross-linked (solid) polyester resin.

Figure 2 -- Typical Reaction for an Unsaturated Polyester Formation



MPCA staff did not use performance test data because Interplastic does not have any performance test data available.

MPCA staff did use standardized emission factors and TANKS to calculate emissions from the facility. Calculations have been included with this document as Attachment A, and a brief discussion of how the two methods were used to calculate Interplastic's emissions follows:

3.1.a. Published Emission factors

Emission factors were used in estimating emissions from Interplastic for the sole purpose of determining what federal and state rules applied to the facility. An emission factor is an average emission value taken from industry data. It relates an activity or process to the quantity of a pollutant released into the atmosphere. Published emission factors exist for many types of processes. Separate emission factors based upon throughput data and values averaged over the length of a characteristic batch process were used to estimate the potential and actual emissions from the processes at the Interplastic facility. Calculations for potential and actual emissions based on these emission factors have been provided in Attachment A.

VOC emission factors for the reactor kettles, thinning tanks, resin mixing, and steam kettle were taken from *"AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants"*, U.S. EPA Document No. 450/4-90-003, March 1990. Particulate emission factors for resin mixing and pigment handling (paint manufacturing), waste resin curing, and natural gas and propane combustion were taken from *"AP-42 Compilation of Air Pollutant Emission Factors for Stationary Point and Area Sources",* 5th Edition, U.S. EPA, Jan 1995 (Updated Feb 1998). The calculations in Attachment A followed the assumptions as provided for in the U.S. EPA guidance dated August 29, 1996 entitled *"Clarification of Methodology for Calculating Potential to Emit for Batch Chemical Production Operations".* That guidance document has been included as Attachment B.

The reader is cautioned against using the emissions information contained in this document to try to develop an exact assessment of the emissions from this facility. Generalized emissions data taken from across an industry is not the most accurate method for measuring emissions from an individual specific company. Therefore no estimate can be made of the degree of error that could result when these factors are used to calculate emissions from this facility. It is possible, that significant differences could exist between actual and calculated emissions, depending on the specific facility configurations, air pollution control equipment, and the operating practices at Interplastic.

Because the potential emissions of styrene and other hazardous air pollutants (HAPs) are based on generic data, further testing and analysis requirements are in the permit to develop an accurate, source-specific emissions data.

3.1.b. TANKS

Emissions from the storage tanks at the facility were estimated using the computer program TANKS. TANKS is a computer software program that estimates volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions from fixed- and floating-roof storage tanks. TANKS is based on the emission estimation procedures from Chapter 7 of EPA's Compilation Of Air Pollutant Emission Factors (AP-42). TANKS employs a chemical database of over 100 organic liquids, and a meteorological database of over 240 cities in the United States. TANKS is capable of calculating individual component emissions from known mixtures and estimating emissions from crude oils and selected refined petroleum products using liquid concentration HAP profiles supplied with the program. TANKS is often used by local, state, and federal agencies, environmental consultants, and others who need to calculate air pollutant emissions from organic liquid storage tanks.

TANKS uses chemical, meteorological, roof fitting, and rim seal data to generate emissions estimates for several types of storage tanks, including: vertical and horizontal fixed roof tanks; internal and external floating roof tanks; domed external floating roof tanks; and underground tanks.

3.2 Ambient Air Monitoring

MPCA and MDH staff efforts to quantify potential exposures of the public to hazardous substances in air starts with available data. Ambient air monitoring data can be one source of available data. Air quality monitoring involves applying scientific methods to accurately determine the concentration of specific pollutants in the air. Actual air quality monitoring data is a necessary part of the information needed to address public concerns. The MPCA sometimes requests that monitoring be done in order to determine if the ambient (outdoor) air is meeting health-based standards. The MPCA may also be concerned about concentrations of specific compounds in the air or what specific emissions are produced by a specific facility, such as Interplastic.

A Chemical Safety Audit of the Interplastic Corporation, Minneapolis, Minnesota published in December 1993 by the U.S. Environmental Protection Agency's Office of Chemical Emergency Preparedness and Prevention recommended that the "Interplastic Corporation should consider performing property line monitoring of airborne pollutants" (see Attachment C).

As described in a December 7, 1998 memorandum from the Minnesota Department of Health to the Minnesota Pollution Control Agency (see Attachment D), monitoring should be done at both the fenceline of the facility and extended beyond into the community around the facility. MDH staff also recommended regular monitoring of normal emissions from the facility, in addition to monitoring when the air pollution control equipment (thermal oxidizer) is not operating.

Several different types of ambient air monitoring have been done in response to the recommendations from the U.S. Environmental Protection Agency and Minnesota Department of Health. Ambient monitoring for styrene and several other VOCs/HAPs done by both Interplastic and MPCA staff is described below in the following sections.

However, the reader should consider the appropriate uses and limitations of air monitoring data, and how these uses and limitations are critical aspects in evaluating health risks from air pollutants. Air monitoring provides limited 2-dimensional data (a single point in space over one prescribed time period) in an attempt to describe an almost unlimited 4-dimensional environment (3 dimensional space over any given period of time).

While the limitations of air monitoring may be generally understood, it is important to review what can and cannot be inferred from limited monitoring data sets based on the following considerations:

- Limited data set, gathered at a single location,
- Sampling time vs. health criteria averaging times, and
- Uncertainties in statistical characterizations of ambient air data

3.2.a. Limited Data Set Gathered at a Single Location

When initially considering environmental air monitoring, monitoring seems to imply that all of the highest concentrations of the worst compounds will be identified. However, due to the cost and available

analytical methods, the number of compounds which are monitored is always restricted. Therefore, while the concentration of many compounds in ambient air may be measured, often only one or two of the measured concentrations will be relevant compounds of interest.

Since background concentrations of pollutants do not vary much within urban or regional areas, monitoring may be the best method of determining background concentrations. This is especially true when the data is used to estimate long-term exposures. However, approximating acute exposures or short-term concentrations from samples acquired over 24-hour periods can be more difficult given daily fluctuations of some pollutants in ambient air.

Fluctuations can result from local changes in emissions, or chemical reactions which are altered by sunlight. Daily fluctuations of pollutant concentrations in ambient air can also be caused by changes in meteorological conditions (see Section 3.2.c. below). Therefore even for background pollutants, determination of potential acute exposures may require a combination of both monitoring and modeling.

The successful use of monitoring to characterize pollutants in ambient air is a function of the probability of sampling characteristic concentrations or events. Air monitoring near facilities with continuous or short-term, similar and repeated processes (e.g. power plants or dry cleaners) may provide data representative of potential exposure concentrations and include meaningful statistical information. Care still needs to be taken when characterizing potential acute exposures due to differences in sample time and averaging time for health criteria (see Section 3.2.b. below).

Determining potential exposures to hazardous pollutants in ambient air can be more difficult if the pollutant has a less predictable source. Industrial facilities using batch processes, such as Interplastic, have emissions which vary over time. In addition, a number of factors such as the daily fluctuations mentioned above, intermittent emissions caused by loading or unloading materials and products, changes in operations, changes in emission control capture or treatment efficiencies, or changes in fugitive emissions may complicate efforts to monitor concentrations in ambient air near some industrial facilities.
For example, if an industrial facility has a process which emits large quantities of a chemical on a random schedule 20 times a year, 82 random (24-hr) samples would need to be collected to assure (99%) that the air near the facility was sampled on a day when a large emission took place. But, if there is only one sampling location, there is no guarantee that the monitor was downwind during the elevated emission event. Even if 3 times the number of 24-hr samples were taken (246), there is probably less than a 50% chance that emissions from the event will be captured, depending on meteorological conditions and the location of the monitoring station.

Environmental monitoring for maximum concentrations of pollutants in ambient air is similar to determining the chances that a single identified individual will be exposed to a contaminant, when the MDH is interested in the chance that anyone may be exposed. While monitored ambient air concentrations may exceed health criteria in one sample out of 246 taken in one location, ambient air concentrations at other locations in the vicinity of a monitoring station may exceed criteria much more often.

3.2.b. Sampling Time vs. Health Criteria Averaging Times

While sampling methods may be designed to characterize long-term concentrations of hazardous chemicals in air, short-term or acute exposures to pollutants can impact human health as well. Without a computer model using actual test data from the facility's processes, twenty-four hour monitoring cannot describe concentrations in 1-hour time periods. Monitoring is a two-dimensional snapshot: one dimension is a point location and the other dimension is time.

For humans, acute criteria are usually prescribed for exposures of one hour or less. For chronic criteria, exposures are often defined as yearly or longer. Exposure to high concentrations of some chemicals for very short lengths of time may have significant health effects. Sample collection time is often 24 hours,

and therefore with enough sample data (see above) potential sub-chronic and chronic exposures may be calculated from monitoring data. However, to calculate potential acute exposures it is necessary to determine conversion criteria and to apply them to a computer model which approximates hourly average concentrations from 24-hour data, and incorporates site-specific information. Sampling over time periods shorter than 24 hours is not economically feasible unless the monitoring is worst-case hot-spot sampling.

3.2.c. Uncertainties in Statistical Characterizations of Ambient Air Data

Distribution of specific chemical concentrations in ambient air are assumed to be log-normal. However, local characteristics may cause sample distribution of pollutant concentrations in ambient air to also take on bimodal or polymodal distributions. Fluctuations in data may result from changes in emissions from nearby sources. If source emissions differ discretely over averaging times similar to sampling times, characterization of the data may not conform to a model of uniform log-normal distribution around a single peak. Instead, peaks demonstrating repeat occurrence may correspond with different characteristic emission levels or events.

For example, a particular facility emits an average of 2.5 lbs/hr of trichloroethane over a year. A model which assumes log-normal, constant emissions predicts a maximum 1-hour concentration near the facility to be about 1700 μ/m^3. This concentration is below the MDH level of concern, an acute Health Risk Value of 2000 μ/m^3. On the other hand, if the activity which generates trichloroethane emissions is performed five times weekly (8 hours each time), trichloroethane concentrations in ambient air 16/21 of the time will be near background levels, while 5/21 of the time concentrations will be significantly elevated. Emissions from this activity would be better characterized as 10.5 lbs/hr for 2085 hrs/yr. Under these conditions, maximum 1-hour exposures are predicted to be over 7000 μ/m^3. This level exceeds the MDH Acute Health Risk Value for trichloroethane, and could cause developmental effects in a sensitive sub-population. Under this scenario, distribution of occurrence of trichloroethane concentrations would show 2 ambient air concentration tendencies for TCE: 1) at a background level and 2) at a level dictated by diffusion of trichloroethane emitted at the average emission rate.

Not only do fluctuations in ambient levels depend on changes in emissions, changes in meteorological conditions will also affect ambient levels. Wind direction and wind speed have obvious effects on pollutant concentrations in ambient air near a point source. Variability of these meteorological parameters are responsible for log-normal distribution of sample data taken at any point in relation to a single source. Meteorological conditions can also cause the formation of tropospheric boundary layers which can effectively decrease the mixing of pollutants in ambient air.

3.2.d. Discussion of Styrene as a Pollutant

The pollutant emitted by Interplastic of most concern to MPCA and MDH staff is styrene. Styrene is both a volatile organic compound (VOC) and a hazardous air pollutant (HAP). Styrene ($C_6H_5CH=CH_2$) is an unsaturated aromatic monomer that is widely used in the production of plastics and resins. It is a colorless, oily liquid with a sweet, aromatic odor. When released to the atmosphere, it may react in the air with hydroxyl radicals and ozone. Styrene may also undergo oxidation by ozone to produce formaldehyde, benaldehyde, benzoic acid and small amounts of formic acid.

Styrene can affect the body if it is inhaled or comes in contact with the eyes or skin. Exposure can irritate the eyes, nose, mouth, throat, lungs and skin. Symptoms of styrene affecting the nervous system include dizziness, lightheadedness, headache and nausea. Effects occur more quickly and become more noticeable and serious as the exposure level increases. Some studies suggest that repeated exposure to lower levels can cause trouble concentrating and memory problems, as well as cause mutations (genetic

changes) in human cells. While styrene has not been demonstrated to be a human carcinogen, it has been listed by the International Agency for Research on Cancer as a possible human carcinogen.

3.2.e. Air Monitoring Plan

In response to complaints regarding odors near the facility, Interplastic was required to submit and implement an Air Monitoring Plan under the requirements of Air Emission Permit No. 05300251-005 issued in February 1996 (see Attachment E). The permit was a major amendment to the facility's existing total facility permit issued in 1986. The amendment authorized the construction and operation of a soil vapor extraction (SVE) system to enhance the removal of volatile organic compounds (VOC) from the soil and groundwater.

Drafts of the Air Monitoring Plan were submitted to the MPCA for approval in November 1996, and January and July 1997. MPCA approved the Air Monitoring Plan dated August 18, 1997 see Attachment F). The purpose of the Plan was to have Interplastic take air samples of several volatile organic compounds (VOCs) at specific times along the property line when its thermal oxidizer was not in operation. The samples collected were analyzed by an independent laboratory to determine the ambient (outdoor) air concentrations of four specific VOCs (styrene, ethyl benzene, dicyclopentadiene and methyl methacrylate). Dicyclopentadiene, or DCPD, was never actually able to be analyzed due to the independent laboratory's inability to quantify a standard.

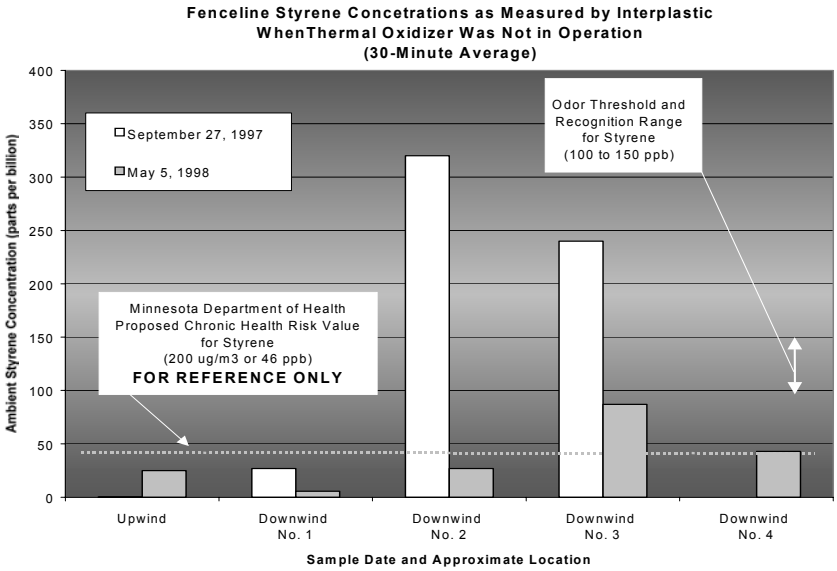
The Plan's general conditions included notification procedures, sampling schedules, employees conducting the sampling, monitoring locations, chemicals to be analyzed and a section for annual review.

Figure 3 summarizes two of the eight incidents when the thermal oxidizer was not in operation and ambient air samples were taken by the company at the property lines and analyzed by an independent laboratory. Levels of styrene detected were at or above the Minnesota Department of Health's proposed Chronic Health Risk Value (HRV) of 200 μ/m^3 (46 ppb) in half the samples taken. Chronic HRVs are considered to be safe levels of exposure for a lifetime.

MPCA staff acknowledge the differences between a 5-minute grab sample, a 30-minute average sample and a 24-hour average sample and how each should be compared to a one-hour ambient air concentration for acute exposure or a 24 hour average for chronic exposure. MPCA staff did not compare any short
term samples to long term health criteria or vice versa. MPCA staff have not interpreted the data to mean that Interplastic is exceeding any Health Risk Value criteria or is in violation of any National Ambient Air Quality Standards.

Although monitored levels of styrene were below levels of concern that the Minnesota Department of Health (MDH) uses in estimating acute exposure of the general population, MDH staff have urged further characterization of emissions until it can be determined that chemicals emitted from the facility do not represent a health hazard. Acute exposure means an exposure or multiple exposures occurring within a short period of time (typically about one hour).

Figure 3 -- Fenceline Styrene Concentrations as Measured by Interplastic When Thermal Oxidizer Was Not Operating



3.2.f. MPCA Staff Monitoring

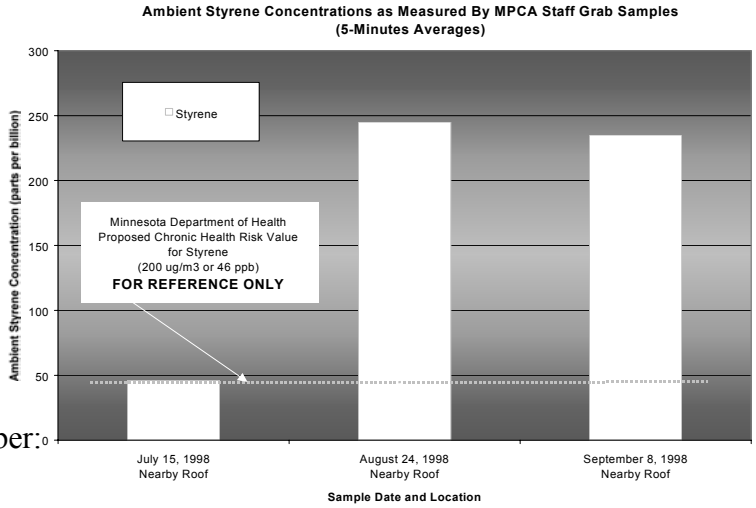
In an attempt to determine whether or not additional characterization of emissions is necessary, both shorter and longer term measurements were taken near the facility. The shorter term measurements are summarized under "Section 3.2.c.1. Grab Samples", while the longer term measurements are summarized under "Section 3.2.c.2. Monitoring Station".

3.2.f.1. Grab Samples

MPCA staff took three random short term (5 minutes) samples using portable monitoring equipment from the roofs of nearby buildings. The three samples collected and analyzed are shown in Figure 4.

Again, levels of styrene detected were at or above the proposed Chronic Health Risk Value (HRV) of 200 μ/m^3 (46 ppb). It is important to note however, that unlike those samples taken in Figure 3, the above samples were taken while the facility's air pollution control equipment (i.e. thermal oxidizer) was reported to be operating. Although monitored levels of styrene were below levels of concern that the Minnesota Department of Health (MDH) uses in estimating acute exposure of the general population, MDH staff again urged further characterization of emissions until it can be determined that chemicals emitted from the facility do not represent a health hazard.

Figure 4 -- Ambient Styrene Concentrations as Measured By MPCA Staff Grab Samples

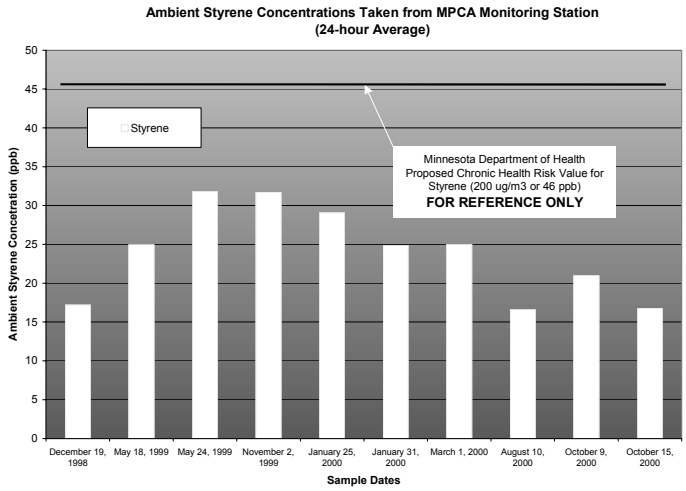


3.2.f.2. Monitoring Station

MPCA staff also installed one monitoring station on a nearby roof close to the facility to collect 24-hour average samples (see Attachment Q). Samples were set up to be taken on a specific schedule in order to collect representative samples from each of the days on which manufacturing takes place. For instance, had a station been set up to collect samples every Tuesday, this would not have been representative of all the days that manufacturing of each of the different batches takes place.

Figure 5 summarizes the ten highest samples collected and analyzed for ambient styrene concentrations as measured by the monitoring station. Available meteorological data suggests that the wind was blowing from the facility in the general direction of the monitor for a portion of the time samples were being taken (see Attachment P). Again, it is important to note that these concentrations were observed while the facility's air pollution control equipment (i.e. thermal oxidizer) was reported to be operating.

Figure 5 -- Ambient Styrene Concentrations Taken from MPCA Monitoring Station



As discussed earlier, the monitoring data summarized in Figure 5 of this document shows MPCA and MDH staff only a "snapshot" of what is occurring over that particular 24-hour time period, and at that particular location. When compared to the spikes in concentration seen in Figure 4, it is possible that ambient styrene concentrations were at levels of health concern for several hours. Emissions from the chemical reactions taking place during Interplastic's batch processes typically peak quickly and decline over the first hours of operation. A monitoring station that is equipped to take a 24-hour average sample, will not note such a spike in VOC emissions, because in this type of monitoring, spikes are averaged out over 24 hours.

Of the many complaints from the community, none were received when the data presented in Figures 3, 4 and 5 was being gathered, therefore MPCA and MDH staff believe it is possible that there are times when emissions are even higher and are at levels of health concern for several hours. This is based upon the numerous complaints received about the facility, many reporting health effects (see Attachment G). Based on the existing data and on the complaints about the facility, MPCA staff believe the many complaints received about the facility indicate that there is a potential for an environmental or public health concern during the times that were not captured by the sampling performed to date. This is why two alternatives were placed in the permit: 1) connect all remaining uncontrolled emission units to the air pollution control equipment (thermal oxidizer), or 2) collect additional site-specific information demonstrated to be representative of the exposure potential through increased monitoring so that the

MPCA and MDH can determine that a public health concern does not exist. See Section 3.4 of this technical support document.

MPCA staff and Minneapolis Department of Environmental Health staff determined Interplastic is the only stationary source that emits styrene in the area. To confirm that monitored emissions of styrene could be attributed to Interplastic and not other sources (i.e. mobile sources) MPCA staff compared average and maximum styrene concentrations from samples collected and analyzed at three other monitoring locations around the Twin Cities Metropolitan Area. These locations were Koch Refinery in Rosemount, Minneapolis Public Library and Holman Airport in downtown Saint Paul. The comparisons are summarized in Figures 6 and 7.

After comparing the average and maximum styrene concentrations with the other locations, it is likely that the styrene emissions summarized in Figures 3, 4 and 5 can be attributed to Interplastic and not to mobile sources.

Figure 6 -- Comparison of Average 24-Hour Average Styrene Samples Collected

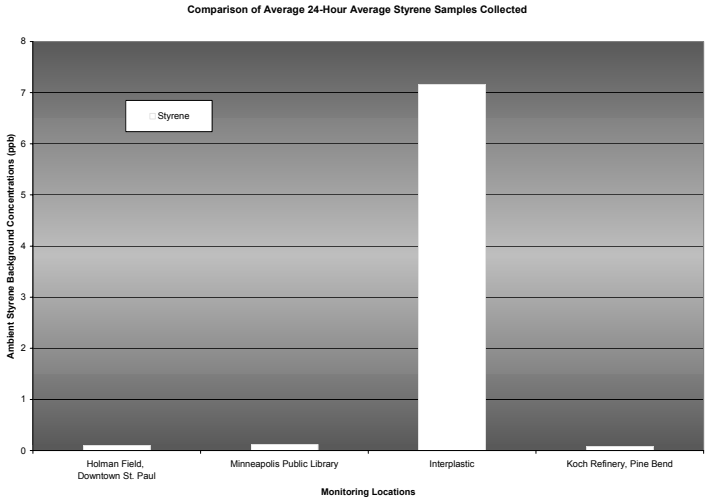
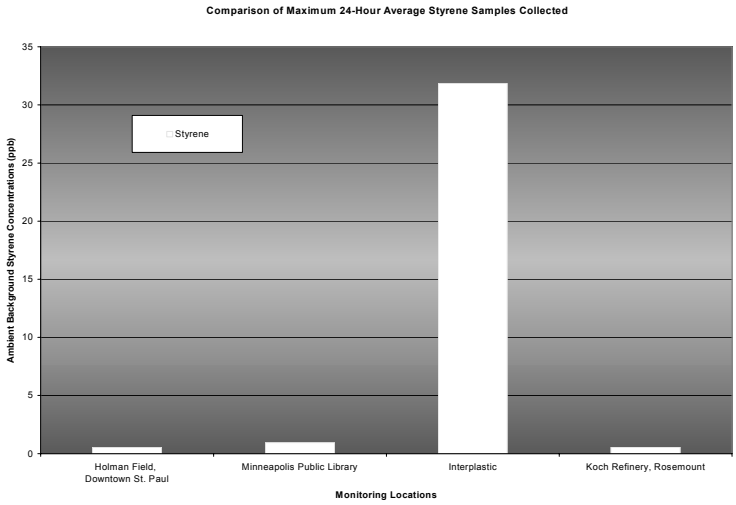


Figure 7 -- Comparison of Maximum 24-Hour Average Styrene Samples Collected



3.3 Capture Efficiency Verification

Based on the monitoring data collected and the complaints from the nearby neighborhood, MPCA staff also decided to further examine the ventilation system at the facility. The effectiveness of an industrial ventilation system is important to reducing emissions and exposure to various air pollutants. Closed vent systems are often required to collect and dispose of gaseous VOC emissions from various processes at manufacturing facilities before venting to air pollution control equipment. These systems usually include ductwork and flow-inducing devices. Closed-vent systems should be designed and operated so that all VOC emissions are transported to an air pollution control device without leakage to the atmosphere.

On past facility visits MPCA staff noted the locations of doors, windows or other openings and their proximity to process equipment and outdoor odors near the facility. Also if Interplastic were getting 100% capture of all VOCs and at least 95% destruction of those VOCs in its air pollution control equipment, the ambient air styrene concentrations in Figures 4, 5, 6, and 7 would likely be much lower.

Therefore the following requirement was added to the permit:

> "VOC Capture Efficiencies: Within 90 days of Permit Issuance, the Permittee shall contract with an independent firm that employs licensed professional engineers and certified industrial hygienists qualified in the design, inspection and evaluation of industrial ventilation and air pollution control systems. The firm shall verify the capture efficiencies of the collection systems for all process equipment contributing to volatile organic compounds (VOC) emissions at the facility in accordance with the latest EPA-approved guidance. This includes, but is not limited to, the following sources:
>
> 1) EU 001- EU 006, Cowles and Small Mixers
> 2) EU 012 - EU 015, Reactor Kettles
> 3) EU 016 - EU 021, Thin Tanks
> 4) EU 007, Steam Kettle
> 5) EU 038, Waste Resin Curing (Hot Box)
>
> "A report which explains the process taken to verify the capture efficiencies of the collection systems for all process equipment contributing to VOC emissions at the facility and the results of the study shall be submitted to the MPCA within 180 days of Permit Issuance.
>
> "For all processes that do not have capture efficiencies of at least 95%, the company shall contract with the independent firm referenced above to design and construct permanent collection systems that have capture efficiencies of at least 95%. The design plan for the capture systems shall be submitted to the MPCA within 270 days of Permit Issuance. Construction of the capture systems shall be completed within 365 days of Permit Issuance, and a notification shall be submitted upon completion of construction."

MPCA staff believe the requirement to verify capture efficiencies is practical. Verifying the capture efficiency means Interplastic can determine whether high levels of styrene in the ambient air can be attributed to leaks and uncaptured emissions. Local firms employing licensed professional engineers and industrial hygienists are available to conduct performance testing so that the capture efficiencies can be verified as required by the permit. A simple database search at http://www.ABIH.org/ yielded more than twenty persons certified for the practice of Industrial Hygiene by the American Board of Industrial Hygiene in Minneapolis. Several of those persons have noted that they are available to act as a consultant to industry.

Verifying the capture efficiency of a closed-vent system would include finding leaks and obstructions, evaluation of duct diameters and damper settings, proper sizing of fans and identifying poor distribution. For example, seals designed to keep process fluids in pumps could fail, allowing VOC-containing fumes to escape to the atmosphere. Testing must also follow the criteria as outlined in *"Guidelines for*

Determining Capture Efficiency" published by the U.S. Environmental Protection Agency Technical Support Division's Emission Measurement Center in January 1995 (included as Attachment H).

This requirement is also consistent with MPCA past practice. The MPCA has required other companies in circumstances where emissions from the facility generated complaints in the nearby community to verify efficiencies of the systems designed to collect exhaust vapors from their processes (MPCA Air Emission Permit No. 23GS-93-OT-1).

3.4 Venting Uncontrolled Process Emissions to Air Pollution Control Equipment

Some of the monitoring data for styrene and other pollutants was collected while the facility's air pollution control equipment was reported to be operating, indicating a concern with those uncontrolled emission units not connected to the control equipment, as discussed in Section 3.2 of this technical support document. Therefore, the requirement to either vent the emissions from the mixing tanks, steam kettle and waste resin curing (Section 1.3 of this document, Page 5) to the air pollution control equipment (thermal oxidizer), or monitor to determine that a public health concern does not exist, is a requirement of the permit. This was done to minimize any remaining potential for negative impacts on air quality. The company will not need to purchase and install new air pollution control equipment, nor will it be required to limit the amount of raw materials used or finished product made to comply with this permit requirement.

It is also important to note that this requirement of the permit is not necessary to keep the facility minor for New Source Review. MPCA staff believe that this is necessary to protect human health and the environment under Minn. R. 7007.0800, subp. 2. The requirement is strongly supported by the Director of the Minnesota Department of Health's Environmental Health Division as described in a July 1, 1999 memorandum from the MDH to the Minnesota Pollution Control Agency, regarding the application of technological control to uncontrolled emissions (see Attachment I).

3.5 Performance Testing

Performance test data on styrene and other pollutants will be gathered as required by this draft permit. The testing will allow Interplastic and MPCA staff to accurately quantify all hazardous and potentially toxic emissions from this facility, rather than continuing to standardized emission factors. Determining emissions from the facility is different from characterizing the ambient air.

Interplastic has indicated that they produce thousands of batches from hundreds of different formulas in any given year. Because of the reasons as discussed in Section 3.1.a., and the concerns noted in Section 3.2.c. of this technical support document, several performance tests spread out over one year would represent the best means to accurately determine air emissions from the facility.

Performance test data from a facility is usually used in place of emission factors published in U.S. EPA documents because site specific data best represents actual conditions. If actual operating test data is to be used however, it must be taken at the maximum possible emission rate and correlated to the operating conditions.

Therefore the permit contains the following requirement:

> "Performance Testing: The Permittee shall conduct performance tests as described below:
>
> 1) Two stack emissions tests downstream of the reactor kettles and upstream of the thermal oxidizer (CE 001) to verify the emission factor used in the Permittee's application.
> 2) Two stack emissions tests downstream of the thinning tanks and upstream of the thermal oxidizer (CE 001) to verify the emission factor used in the Permittee's application.

3) One stack emissions test downstream of the mixing tanks and upstream of the thermal oxidizer (CE 002) to verify the emission factor used in the Permittee's application.

4) The Permittee shall identify which pieces of equipment to test in order to provide representative emissions data for the facility, and agreed upon by the MPCA. Sufficient detail describing how the Permittee arrived at which pieces of equipment to test shall be included in the Performance Test Plan, or each single emission unit shall be required to be tested instead.

5) One stack performance test both upstream and downstream of the thermal oxidizer (CE 002) to measure VOC destruction efficiency.

6) Two stack emissions test downstream of the thermal oxidizer (CE 002) to quantify and speciate criteria and hazardous air pollutant emissions from the facility. At least one of the tests shall be conducted during a batch cycle of a resin containing dicyclopentadiene.

7) All stack emissions testing shall be conducted in accordance with U.S. EPA approved testing methods and during maximum operation of all connected VOC-producing equipment, and therefore maximum VOC loading of the thermal oxidizers.

As described in a December 10, 1998 memorandum from the Minnesota Department of Health to the Minnesota Pollution Control Agency (see Attachment J), toxicologists recommended that VOC emissions be characterized to determine the constituents of the emitted compounds, the quantities emitted, and the potential for the exposure of nearby communities to levels of concern. The type of performance testing required by this section of the draft permit will allow for the VOC emissions to be speciated according to compound. This is so that MDH and MPCA staff can evaluate which specific chemicals are being released and at what rate.

The permit requires future regular performance testing (i.e. not related to the installation and initial operation of the soil vapor extraction system or the Total Facility Air Emissions Toxics Analysis) to be conducted on CE 001 and CE 002 every three years to measure VOC destruction efficiency. The temperature at which the oxidizers pass their performance tests will be the new minimum temperature allowed, although they can always operate at a higher temperature. The minimum temperature required for the adequate destruction of styrene was verified empirically by MPCA staff in Attachment K.

3.6 Total Facility Air Emissions Toxics Analysis (Atmospheric Computer Dispersion Modeling)

While ambient air monitoring shows actual concentrations (and therefore possible exposures) at a specific location and times, such data rarely describes potential exposure levels of neighboring communities over time. Modeling of normal everyday operations and also unsuspected, intermittent emissions (i.e. during a breakdown or shutdown of the air pollution control equipment) can provide a more accurate estimate of the potential exposure of the public to certain pollutants.

Sophisticated computer models are used to relate emission rates from a facility such as Interplastic to concentrations in the neighboring community. They serve as an important tool in helping solve local air pollution concerns. The mathematical assumptions used by the model are usually validated in the field. This involves measuring ambient concentrations, emissions from nearby sources, wind speed, direction, topography, meteorology and sunlight intensity.

Attachment O illustrates the location of the Interplastic site in relation to the neighboring communities on the Northwest and South sides of plant. To better determine whether emissions from the facility pose a health hazard, the permit contains the following requirement:

"Implementation of a Total Facility Air Emissions Toxics Analysis: The Permittee shall perform an air toxics analysis for all hazardous air pollutants emitted from the facility. That air toxics analysis shall be based on emissions data obtained during performance testing referenced above and include dispersion modeling for all identified pollutants of concern. Elements of the analysis shall include:

1) Air dispersion modeling of all identified pollutants of concern using the most recent EPA-approved computer models. The protocol and methodology shall be agreed to by the MPCA prior to the performance of the dispersion modeling.

2) A comparison of maximum modeled 1-hour concentrations to draft Acute Health Risk Values (HRVs) or other methods used to estimate acute exposure levels as developed by the Minnesota Department of Health.
3) A comparison of maximum modeled three-hour concentrations with draft Subchronic HRVs.
4) A comparison of maximum modeled annual concentrations with draft Chronic HRVs."
5) 5) A comparison of maximum modeled 1-hour, 8-hour, 24-hour and annual concentrations to the National Ambient Air Quality Standards (NAAQS), as applicable.

This is a state only requirement and is not enforceable by the Administrator or citizens under the Clean Air Act.

Based upon a letter received during the public comment period by the Minnesota Department of Health, NOx, PM/PM10 and CO will be added to the list of pollutants of concern to be modeled.

A Chemical Safety Audit of the Interplastic Corporation, Minneapolis, Minnesota published in December 1993 by the U.S. Environmental Protection Agency's Office of Chemical Emergency Preparedness and Prevention (see Attachment C) stated that ". . . the Company has indicated an interest in modeling and will begin to research available computer hazardous air release models."

A Total Facility Air Emissions Toxics Analysis will take into account several factors in estimating any potential health effects from the facility including:

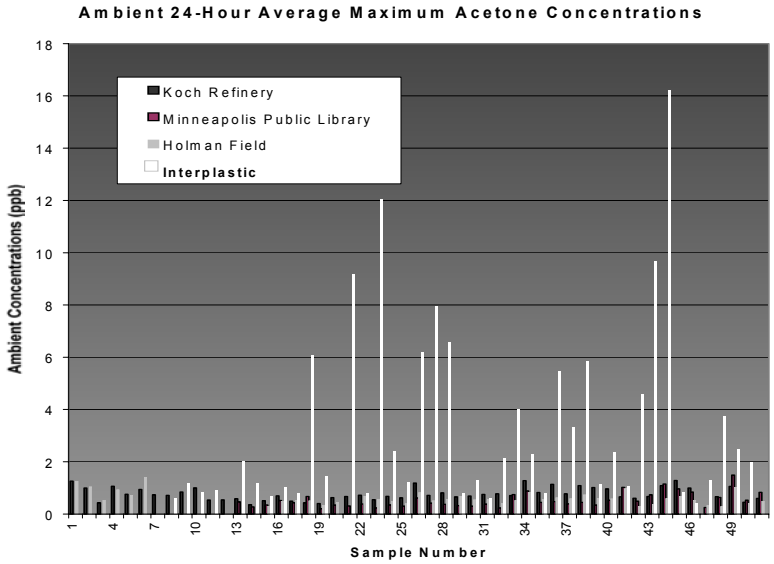
- the cumulative and often additive effects from the emissions of multiple chemicals;
- chemical stability;
- potential severity of health effects; and
- the uncertainty factor which may approximate the difference between protecting a healthy adult population and protecting a sensitive population.

As mentioned above, an Analysis will include an evaluation of other chemicals used at the facility, in addition to styrene and other hazardous air pollutants. For instance, Interplastic uses acetone, (C_3H_6) a colorless liquid with a fragrant, mint-like odor, as a solvent to clean its process equipment. Interplastic uses thousands of gallons of acetone each year for cleaning uncured polyester resin from the reactor kettles, thinning and mixing tanks and the lines that run between them, tools, equipment and other contaminated surfaces. More than 50 percent of acetone used can be lost to the air through evaporation. Exposure to acetone can cause eye, noise and throat irritation. As part of the Analysis, records of how much acetone is purchased and how much is shipped out as waste or reclaimed may be examined, so that Interplastic can calculate how much is emitted.

Figure 8 summarizes fifty-nine samples of acetone taken from September 1998 to September 1999. The 24-hour average samples were collected and analyzed and compared to the concentrations from samples taken at three other monitoring locations around the Twin Cities Metropolitan Area. These locations were Koch Refinery in Rosemount, Minneapolis Public Library and Holman Airport in downtown Saint Paul.

Figure 8 – Maximum Concentrations of Acetone at Interplastic Compared to

Other Twin Cities Metropolitan Area Locations



Because concentrations of acetone are considerably higher near Interplastic than the other locations, a Total Facility Air Emissions Toxics Analysis would take into consideration emissions of all significant chemicals from the facility, including chemicals like acetone.

3.7.a. Waste Resin Curing Process ("Hot box")

Where does the waste resin come from?

Interplastic produces unsaturated polyester resins at the Minneapolis location. The manufacturing process produces waste resin in several ways:

- unusable final product generated from cleaning the reactor kettles, thinning and mixing tanks and the lines that run between them; or
- occasionally final product fails to meet customer specifications and is returned to the facility for disposal; or
- to assure proper quality, final product is filtered prior to containerization for final shipment. This process generates filter bags which contain remnants of the manufactured materials and are non-reusable.

What form is the waste resin in?

The primary reason the products are unusable is that they have begun to "gel". Gelling is the term which indicates the onset of the polymerization process and the styrene is being consumed into the solid matrix. The waste resin is typically in an uncured liquid or semi-gelled unsolidified form. The waste resin is classified as a hazardous waste for ignitibility.

Treatment vs. Disposal

Disposal of the waste resin as a hazardous waste would be expensive, so the waste is treated at the facility in an emission unit referred to as a "hot box". Polymerization is used to treat the waste resin.

How is the waste resin treated?

After unusable finished products are identified and transferred manually into 55 gallon drums with the lids on and seals banded, they are staged for introduction into the hotbox (approximately 500 lbs each).

Filter bags are removed from their housings at multiple locations within the facility's operating area and are also transferred manually into 55 gallon drums. The bags are coated with polyester resin and styrene. When a drum becomes full of used bags (approximately 350 lbs each), the drums are staged for introduction into the hotbox.

When a supply of drums is ready for curing, the cabinet doors are opened, the drums are placed in the hotbox and are left there at a temperature of approximately 200 degrees F for 10 to 14 days. When polymerization is used for waste resin treatment, for safety reasons, the treatment is typically conducted in an open container or closed containers with the barrel holes open. This is because exothermic reactions occur when a chemical catalyst or heat is added to initiate the reaction and drive the cross-linking treatment process. The open containers contribute to volatile organic compound emissions.

The catalyst and the application of heat results in the polymerization of the available styrene in each of the two types of drums, and the final result is a drum containing hard, solid, non-volatile, non-hazardous material. The drums are removed from the hotbox, allowed to cool until they are safe to handle, and readied for shipment offsite to an MPCA-permitted waste disposal facility.

What are the emissions associated with the waste resin curing process?

Calculations of emissions associated with the hotbox have been included as Attachment A. To verify the emission factors used in calculating emissions from the hotbox, a requirement was placed in the permit to weigh drums of resin prior to and after heat treatment process, and record the difference in those weights. If the data collected shows that the emission factor has underpredicted emissions, the Permittee may need to apply for a permit amendment to change the calculation method.

Is there a concern with the waste resin curing process?

In the past, when the hot box was uncontrolled, MPCA staff believe emissions from it contributed substantially to intermittent episodes where complaints in the neighboring community were reported, because it is located outside as seen in Figure 9.

What has been done to address any concerns regarding the waste resin curing process?

A requirement was placed in the permit to verify that all emissions from the hot box are being captured, and to continue to vent those emissions to the company's air pollution control equipment (thermal oxidizer).

Figure 9 -- Waste Resin Curing ("Hot box")

3.7.b. Soil Vapor Extraction System

Because Interplastic is located on a state superfund site, a Remedial Action Plan dated May 1994 required remediation efforts to remove chemicals from the soil and groundwater. Air Emission Permit No. 05300251-006 issued September 14, 1999, authorized the construction and operation of a soil vapor extraction (SVE) system required by the Remedial Action Plan as approved by the MPCA. The SVE system was being installed to enhance the removal of volatile organic compounds (VOC) from the soil. VOC emissions from the SVE system are vented to a new thermal oxidizer.

A soil vapor extraction system is a method of remediating unsaturated zone soils containing volatile contaminants. SVE vents are installed with a screened area exposed to contaminated soil in the unsaturated zone. A vacuum is applied to the vents to draw air through the void spaces in the unsaturated soils which allows for volatilization of contaminants into induced subsurface airstreams. Soil contaminants are drawn out of the SVE vents in a vapor phase. An illustration of a soil vapor extraction vent has been included as Attachment L.

Ducting for most of the seven SVE vents will be installed aboveground, where possible, on Interplastic's existing pipe racks or other support structures. Ducting from the SVE vents near the railroad tracks will be buried due to the close proximity of the tracks and Cleveland Street. A site map showing the location of the seven SVE vents has been included as Attachment M.

The Permittee took a limit to restrict the potential emissions associated with the installation of the system to less than 250 tons/yr to remain a non-major source under the federal New Source Review program (40 CFR §§ 52.21). Emissions were limited by using the minimum destruction efficiency of 95 percent for the Permittee's thermal oxidizer as allowed by Minn. R. 7011.0070, subp. 1. Calculations for determining the temperature required to maintain this destruction efficiency for styrene have been included as Attachment K. The Permit No. 05300251-006 requires a minimum combustion chamber temperature of greater than or equal to 1400° F on a 15-minute average at all times the oxidizer is in operation.

If the SVE thermal oxidizer (CE 002) breaks down or is ever shut off (i.e. for maintenance and/or troubleshooting) the permit requires the SVE system's blower to also be shut down. Several concerns have been raised over whether this will affect the performance of the soil vapor extraction process. MPCA staff believe it will improve the overall efficiency of the system. Flow of air to soil vapor extraction systems typically does not occur as uniform flow through the entire unsaturated soil column. Instead the air flow (and vapor extraction) tends to occur along "preferred channels or pathways" into the vents. This ends up removing vapor from only a portion the contaminated soil zone. When the vacuum system controlling the vapor extraction is turned off, the air flow paths are disrupted. Restarting the vacuum system creates new air flow paths and effectively pulls vapors from other locations where vapors were not previously being extracted.

3.7.c. Steam Kettle

The steam kettle is used to make "S-2" which consists of a mixture of wax and styrene. It is made and used in mixing operations as an ingredient. A requirement to either vent the emissions from the steam kettle to the company's air pollution control equipment (thermal oxidizer), or monitor to determine that a public health concern does not exist, is a requirement of the permit.

Calculations of emissions associated with the steam kettle have been included as Attachment A.

3.8 Future MACT Promulgation

The Permittee's facility described in this permit is a major stationary source for which US EPA will promulgate a Maximum Achievable Control Technology (MACT) standard to be found in 40 CFR Part 63. The source category's MACT standard (Miscellaneous Organic Manufacturing) is expected to be promulgated November 15, 2000. Because the facility will receive its permit after the deadline for the

promulgation of Section 112 (g)(2)(B) of the Clean Air Act, the following language was added to the permit:

> "The permittee shall not construct or reconstruct a major source of hazardous air pollutants as defined in 40 CFR part 63, subpart B, section 63.2 without first obtaining a preconstruction permit."

3.9 Exclusion of Periodic Monitoring for Opacity and PM/PM10 Emission Limits

MPCA staff's experience has been that natural gas or propane burned in boilers and other combustion devices (i.e. process kettle burners and air pollution control equipment) contributes negligibly to opacity.

Performance testing or periodic monitoring were not required for particulate matter because it is extremely unlikely that the emission limit would be exceeded burning natural gas or propane. AP-42 predicts potential emissions from the combustion sources to be several orders of magnitude less than the allowable limit.

Since the emissions of primary concern with this facility are volatile organic compounds, MPCA staff believes monitoring of compliance with the PM/PM10 limits for the mixing tanks (EUs 001-006) is unnecessary. PM/PM10 emissions have been calculated at 0.008 gr/dscf, while the emission limit is 0.3 gr/dscf.

4.0 Summary of Changes Made to Permit Based on Comments

In addition to several commentors indicating strong support for the permit, Interplastic Corporation's attorney submitted a letter dated August 9, 2000 providing seven pages of comments on the public noticed permit. The U.S. Environmental Protection Agency also submitted comments on August 9, 2000, via e-mail. In response to the comments, MPCA staff made the following revisions to the permit:

4.1 Typos in Rule Citations

Typos were corrected in the performance test requirements, insignificant activities and emissions minimization sections of the permit.

4.2 Permit Shield language

The Permit Shield was modified to include the following language based on new requirements from the U.S. Environmental Protection Agency:

> "Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provisions of the applicable requirements identified in the permit as the basis of each condition.
>
> Subject to the limitations Minn. R. 7007.1800 and 7017,0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements."

4.3 Insignificant Activities

MPCA staff added the North and South drumming stations (EUs 009-010), the finished product tanker truck loading (EU 037) and the pilot plant's (EU 036) thin tank to the 'Insignificant Activities Required to be Listed' in Appendix A of the permit. MPCA staff removed the requirements to vent these emissions units to a thermal oxidizer from the permit because they were insignificant.

4.4 Capture Efficiency Verification Requirements

MPCA staff removed the requirements to verify the capture efficiency of the North and South drumming stations (EUs 009-010) and the finished product tanker truck loading (EU 037) from the permit because they were insignificant.

4.5 Performance Test Requirements

MPCA staff added language to the Total Facility's Performance Testing Section that was more specific as to which emission units are to be tested, what methods are to be used and the purpose of each test. The language in the public noticed permit was not specific to emission units and did not differentiate between stack testing for the purpose of verifying emission factors and performance testing to measure VOC destruction efficiency.

4.6 Air Dispersion Modeling Analysis

MPCA staff added requirements to the analysis to compare modeled criteria pollutant concentrations with the NAAQS, based on predicted modeled exceedences provided in late September by the Minnesota Department of Health for NOx and PM10. The data implied that the NOx, PM and styrene emissions from this facility need to be better characterized.

All changes made to the public noticed permit dated July 6, 2000 were viewed as clarifications and refinement of the noticed permit, and were not considered substantial enough to warrant renoticing of the permit.

5. Conclusion

The Interplastic facility emits styrene, in addition to several other hazardous air pollutants, above thresholds requiring a federal Part 70 Total Facility Operating Permit. Monitored styrene concentrations near the facility were considerably higher than concentrations measured at three other monitoring locations in the Twin Cities Metropolitan Area.

Because styrene and other the hazardous air pollutants have known health effects, this air emission permit will minimize the amount these pollutants being emitted by requiring the Permittee to:

- vent process emissions from the mixing tanks, steam kettle and waste resin curing to air pollution control equipment, or produce verifiable, comprehensive data concerning the impact of styrene and other HAPs emissions from the Permittee's facility on the ambient air in the surrounding community;
- contract with an independent professional firm to verify at least 95 percent of the emissions are being captured;
- capture all previously uncontrolled process emissions where the efficiency has been determined to be less than 95 percent;
- perform several engineering performance tests on the largest sources of HAPs at the facility to determine the worst-case scenario emissions and to verify information used in the Permittee's application; and,
- use the above test data in computer modeling to produce a comparative analysis of the ambient concentrations in the surrounding community with the Minnesota Department of Health's proposed Health Risk Values for the hazardous air pollutants (HAPs), and with the National Ambient Air Quality Standards (NAAQS) for the criteria pollutants.

Based on Minn. Stat. § 116.07, subd. 4a(a), Minn. R. 7007.0800, subp. 2 and the Minnesota Department of Health's Consultation dated April 1999*"Interplastic Corporation: Recommendations for Draft Air Permit,"* minimizing the amount of styrene and other hazardous air pollutants emitted will reduce the potential for a possible environmental or public health concern, and will protect human health and the environment (see Attachment N).

Based on the information provided by Interplastic and the Minnesota Department of Health, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 05300251-001 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

MPCA Staff Members on Permit Team: Steve Sommer (Performance Test Coordinator)
Rhonda Land (Enforcement Staff and Recordkeeping Coordinator)
Dan Sullivan (Permit Engineer)

Attachments:

A. MPCA Staff Emissions Calculations
B. U.S. EPA Guidance Memorandum dated August 29, 1996 *"Clarification of Methodology for Calculating Potential to Emit for Batch Chemical Production Operations"*
C. *"A Chemical Safety Audit of the Interplastic Corporation, Minneapolis, Minnesota"* published in December 1993
D. Minnesota Department of Health Memorandum dated December 7, 1998*"Review of MDH Recommendations of the Northeast Minneapolis Interplastic Facility"*
E. Air Emissions Permit No. 05300251-005
F. Air Monitoring Plan
G. Odor Complaints Received by MPCA staff in 1998 and 1999
H. U.S. EPA Guidelines for Determining VOC Capture Efficiency (U.S. EPA Method 204 and 204A through 204F)
I. Minnesota Department of Health Memorandum dated July 1, 1999*"Interplastic Air Permit"*
J. Minnesota Department of Health Memorandum dated December 10, 1998*"Addendum to the December 7, 1998 Memo on the Interplastic Air Permit"*
K. MPCA Staff Styrene Destruction Temperature Verification Calculations
L. Illustration of a Soil Vapor Extraction Vent
M. Site Map of the SVE Vent Locations
N. Minnesota Department of Health Consultation dated April 1999*"Interplastic Corporation: Recommendations for Draft Air Permit"*
O. Aerial Photograph of the Interplastic Facility in Relation to Nearby Communities
P. Wind Direction and Speed Data for Ten Highest 24-Hour Average Samples
Q. MPCA Ambient Monitoring Station

Attachment G

Odor Complaints Received by MPCA Staff
During 1998 and 1999

Permit Action Number:
Date: 1/30/2004

Attachment D

Minnesota Department of Health Memorandum
dated December 7, 1998

"Review of MDH Recommendations of the Northeast Minneapolis Interplastic Facility"

Permit Action Number:
Date: 1/30/2004

Attachment J

Minnesota Department of Health Memorandum
dated December 10, 1998

"Addendum to the December 7, 1998 Memorandum on the Interplastic Permit"

Permit Action Number:
Date: 1/30/2004

Attachment B

U.S. EPA Guidance Memorandum dated August 29, 1996

"*Clarification of Methodology for Calculating Potential to Emit for Batch Chemical Production Operations*"

Permit Action Number:
Date: 1/30/2004

Attachment F

Air Monitoring Plan

Permit Action Number:
Date: 1/30/2004

Attachment A

MPCA Staff Emissions Calculations

Permit Action Number:
Date: 1/30/2004

Attachment K

MPCA Staff's Minimum Styrene
Destruction Temperature Verification Calculations

Permit Action Number:
Date: 1/30/2004

Attachment I

Minnesota Department of Health Memorandum
dated July 1, 1999

"Interplastic Air Permit"

Permit Action Number:
Date: 1/30/2004

Attachment E

Air Emission Permit No. 05300251-005

Permit Action Number:
Date: 1/30/2004

Attachment M

Site Map of the Soil Vapor Extraction (SVE) Vent Locations

Permit Action Number:
Date: 1/30/2004

Attachment L

Illustration of a Soil Vapor Extraction (SVE) Vent

Permit Action Number:
Date: 1/30/2004

Attachment C

"A Chemical Safety Audit of the Interplastic Corporation, Minneapolis, Minnesota"

Published December 1993 by the U.S. Environmental Protection Agency's Office of Chemical Emergency Preparedness and Prevention

Permit Action Number:
Date: 1/30/2004

Attachment H

"Guidelines for Determining Capture Efficiency"

Published January 1995 by the U.S. Environmental Protection Agency's Technical Support Division

Permit Action Number:
Date: 1/30/2004

Attachment N

Minnesota Department of Health Consultation
Dated April 1999

*"Interplastic Corporation:
Recommendations for Draft Air Permit"*

Permit Action Number:
Date: 1/30/2004

Permit Action Number:
Date: 1/30/2004

Attachment O

Aerial Photograph of Interplastic Facility
in Relation to Nearby Communities

Permit Action Number:
Date: 1/30/2004

Attachment P

Wind Direction and Speed Data for
Ten Highest 24-Hour Average Samples

Permit Action Number:
Date: 1/30/2004

Attachment Q

MPCA Ambient Monitoring Station
Set Up to Take 24-Hour Random Samples

Permit Action Number:
Date: 1/30/2004

EU, GP or CE No.:	SV No.:	Emission Unit Description	PM tpy	PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	VOC tpy	Pb tpy	Single HAP tpy	All HAPs tpy
GP 001	002-004	Indirect Heating Equipment									
GP 002	005-008	Process Kettle Burners									
GP 003	013	Cowles and Mixers									
GP 004	013	Raw Material Kb Storage Tanks									
GP 005	013	Base Resin Storage Tanks									
GP 006	001	Process Kettles, Thinning Tanks, Pilot Plant Kettle & Thin Tank, and Mix/Blend Tanks									
GP 007	013	Soil Vapor Extraction Vents									
GP 008	001, 013	Thermal Oxidizers and Other Control Equipment									
GP 009	009	Finished Product Drumming									
GP 010		Above Ground Storage Tanks									
EU 007	009	Steam Kettle									
EU 037	013	Finished Product Loadout									
EU 038	013	Resin Curing Process									